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# JSP

## JOURNAL OF SURGERY PAKISTAN INTERNATIONAL

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**T**he importance of training, especially for doctors and other medical personnel cannot be over emphasised. It has to be intensive hands-on, practical and in real life situations. If not properly designed, supervised and conducted, it will play havoc with the lives of the patients. Training of surgeons is even more difficult and dangerous because of instructional difficulties on real patients and often in emergency situations. Hence it is an extremely serious matter which starts from screening of potential surgeons to final certification. But unfortunately, especially in countries like ours, there is no aptitude test and very little hands on training on models and animal materials. Worldover all potential doctors are required to learn at least the basic skills on inanimate models, dummies, mannequins and animals before they are even allowed to touch a human being.

The curricula followed in our medical institutions is more than a century old and even more regrettable is the apathy and unwillingness on the part of people who are responsible for redesigning the whole system. It is high time to change with the times and follow the latest developments, strategies and modern methods of learning for instructions.

The newer experiments with change of syllabus and the methodology of teaching under-graduates is also full of flaws and does not provide the desired learning experience to medical students. Exposing them directly to patients and vice-versa can specially be harmful and difficult for the trainees to comprehend and have useful learning experience because of the inhibition of a fresh young person who is newly exposed to peoples' miseries.

It is high time that policy makers of the country should seriously sit down with an open mind and revise and review the training syllabi of medical institutions of the country, keeping in view the modern principles of training. Keeping clear objectives, not only in mind but also on paper, before designing the newer instructional strategies and using all the modern tools of instructions and assessment to the maximum. Latest information technology has enmassed huge data of literature, experience and studies to guide us. Only we need to go through it and draw up workable, acceptable and applicable plans to achieve our goal of training a large number of doctors, especially surgeons, who may provide standard medical and surgical care to our patients at reasonable cost effectively.

**ASADULLAH KHAN**

# A STUDY OF URINARY CALCULI IN CHILDREN

BILQUIS LAKHANI, KHEM CHAND, JAY PARKASH, SAEED AHMED

## ABSTRACT:

The present study was carried out in Medical Unit-1 of NICH, Karachi during the years 1998-99. All the fortysix children, aged between 7 months and 12 years, with urinary calculi were included in the study. Male to female ratio was 2.3:1. Urine examination, serum calcium, inorganic phosphate, alkaline phosphatase, serum uric acid, radiology, ultrasound scan, DTPA, DMSA scan and stone analysis were carried out. Urine culture was positive in 43% of cases, *E.coli* being the commonest organism in both the sexes. On analysis 48% of stone contained calcium oxalate, 20% urates, 12% mixed and 8% uric acid. Surgical removal of stones with specific therapy for metabolic stone was the line of management.

**KEY WORDS:** Urinary Calculi, Children

## INTRODUCTION

Pakistan lies in what is referred to as a "stone belt", stretching from Egypt, through Iran, Pakistan, India and Thailand to Indonesia.<sup>1,2</sup> The incidence of urinary calculi is very high in children and is the most common ailment encountered in paediatric urological practice.<sup>3</sup> In children under 11 years, 23% of operative procedures are performed for stones.<sup>4</sup> Calculi are 8-10 times more frequent in males than in females. Urolithiasis remains a major source of morbidity in the stone belt countries. In a single government hospital in Pakistan, over period of a year, one out of 73 admissions were of urolithiasis.<sup>6</sup> The composition of stones is predominantly calcium oxalate or ammonium acid urate. Some form of stone analysis is essential to enable the clinician to understand and treat effectively the underlying metabolic pathophysiological process. Stones obstruct and cause pyelonephritis and cortical scarring. In Pakistan 12% admission to nephrological units are for renal failure from calculus disease.<sup>5,6</sup> Because of the disastrous consequences and loss of kidney, every effort must be made to prevent stone disease and treat it promptly. The aim of our study was to collect data related to stone disease in children at National Institute of Child Health, Karachi.

## PATIENTS AND METHODS

All children presenting with history of haematuria, dysuria abdominal pain, burning micturition and history of passing

gravels in the urine were evaluated for presence of stones. All the children so diagnosed were included in the study. Clinical features radiological findings, laboratory data and stone analysis were recorded and reviewed.

## RESULTS

Fortysix patients with urinary calculi were studied, male predominated in this series (Table I).

**TABLE-I AGE AND SEX DISTRIBUTION OF PATIENTS**

Male	Female	Age	Total
07	03	< 3 years	10
17	08	3-5 years	25
05	03	6-10 years	08
03	-	> 10 years	03
Total			46

Majority of patients presented with U.T.I (Table II)

**TABLE-II CLINICAL FEATURES (N=46)**

Symptoms	Number	Percentage
Urinary tract infection	25	54.00 %
Chronic renal failure	10	21.70 %
End stage renal disease	03	6.51 %
Haematuria	08	17.36 %
Dysuria & retention	03	6.51 %
Fever	10	21.70 %
Passing gravel in urine	06	13.02 %
Renal colic	07	15.19 %

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Many patient had more than one clinical features.

Radiology and ultrasound scan were very sensitive in picking up stone in the urinary tract. Plain X-ray showed radio-opaque shadow in renal area in 30 cases. Hydronephrosis was found in 11 cases on ultrasound scan. Renal scarring on IVP was noted in 12 cases. Chemical analysis of stone performed in 25 cases revealed that the majority were calcium oxalate (48%) stones (Table III).

**TABLE-III RESULT OF STONES ANALYSIS (N= 25)**

Types	No. of Cases	Percentage
Calcium oxalate	12	48%
Calcium phosphate	02	08%
Urates	05	20%
Cystine	01	04%
Uric Acid	02	08%
Mixed	03	12%

Metabolic workup is shown in Table IV.

**TABLE-IV BIOCHEMICAL RESULTS**

	No. of Patients	%	Result
Serum calcium	16	34.7%	>7.5mg
Serum phosphate	16	34.7%	>5 mg%
Serum alkaline phosphatase	16	34.7%	>200-U/L
Serum uric acid	02	4.3%	7 mg%

## DISCUSSION

Our patients came from all parts of the province. Majority of the patients were referred from remote Basic Health Units (BHUs). Most of the patients were between 3-5 years of age. Most of the workers from stone belt countries and also from our country have reported similar findings.<sup>7,8</sup> In our experience there is a preponderance of male patients; this observation is also seen in western world and also in developing countries, whether underlying genetic factors play any role in this sexual bias is unknown.<sup>9</sup> Some workers have attempted to explain the male predominance on the basis of long tortuous urethra in males.

The commonest clinical presentation was urinary tract infection in 25 cases E.coli was the commonest organism involved. Correlation of this organism with calculus disease is uncertain. Urinary tract infection has also been reported by other workers.<sup>10,11</sup> Haematuria was the third most common symptom (17.36% cases) which is also reported by others from stone belt countries. This may be due to greater area of mucosal contact of stone<sup>10</sup> but the exact pathogenesis is uncertain. Seven patients present-

ed with renal colic but it was not observed as the classical renal colic as seen in adult patients with renal stone. Many workers have reported similar pattern of clinical features.

The spectrum of stone composition varies greatly from country to country. These variations largely reflect the wide variety of dietary and culture differences that effect stone formation. The frequency of calcium oxalate, ammonia urate and phosphate lithiasis is similar to that reported by other authors.<sup>12</sup> Urate were more common in vesical stones and calcium oxalate in renal stones. In our series this may be attributed to the diet we consume e.g rice which is metabolized to oxalate and green leafy oxalate rich vegetables.

Twenty five children underwent surgery for removal of stones. Pyelolithotomy was done in 10 patients (21.7%) and suprapubic cystolithotomy in 12 (26%). Four (8.6%) were referred for lithotripsy. Ten (21%) had chronic renal failure and 3 had end-stage renal disease due to calculus.

Like the rest of the world, Pakistan has its share of urinary problems and more so in the form of calculus disease. It causes more suffering and renal damage than any other renal problem. The hot atmosphere and lack of adequate fluid intake, coupled with the fact that we live in a stone belt, has only helped to increase the incidence of calculi in our country. The consequences of calculus disease in children are serious and only early detection may prevent the loss of nephrons. Every effort should be made to stabilize the renal function by removing sources of irritation, infection and obstruction by early recognition of this preventable problem.

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# OLECRANON FRACTURES TREATED BY WEBER VASEY TECHNIQUE

ANISUDDIN BHATTI, MOHAMMAD ASHARAF MEMON, SULTAN AYOUB MEO

## ABSTRACT:

*This prospective study is based on 36 patients with displaced olecranon fracture managed with open reduction and internal fixation (ORIF) by tension band wiring (TBW) to evaluate the functional results, to compare the results with published literature and to formulate future plan for this type of fracture management. Out of 36 patients, 29 (80%) scored good to fair results, seven (20%) scored poor including one non-union. We encountered higher than expected rate of minor complications like superficial infection in three (3.4%) patients, pain due to irritation by implant in 12 (33%), skin breakage in 6 (16.5%) and proximal migration of K wires in 4 (11%).*

**KEY WORDS:** Olecranon fractures, Tension band wiring, Functional results.

## INTRODUCTION

Olecranon fractures are fairly common among injuries around the elbow joint. They present special problems of non-union or fibrous union, if left untreated because of constant pull of triceps tendon on proximal fragment; whereas immobilization in extension by non-operative treatment leads to stiff elbow. Anatomical reduction is therefore mandatory to avoid stiffness, degenerative changes and arthritis. The concept of open reduction and internal fixation was laid by Lister in 1884<sup>1</sup> who used stainless steel wire for fixation, whereas Daland<sup>2</sup> (1933) was the pioneer of accurate reduction of displaced fractures. Since then many methods have been devised for rigid fixation including: fixation by cancellous screw<sup>3</sup>, McAtee Olecranon device<sup>4</sup>, Zeulzer<sup>5</sup> hook plate, contoured semitubular<sup>6</sup> and Sherman<sup>7</sup> plates and tension band wiring<sup>8</sup> (TBW).

The most common and widely used procedure for all types of olecranon fractures today is fixation with TBW by Weber Vasey technique.<sup>8</sup> Various modifications have been made in the implant material to achieve better fixation and maintain alignment till fracture unites, but they are of little importance. We used TBW in these fractures as being more suitable, easily applicable in emergency and on routine list. This allows early mobilization of elbow

after surgery and prevents stiffness. Majority of our patients come late for treatment and had some degree of stiffness and gross swelling that warranted minimum use of implant and early mobilization. We used TBW procedure to see its success in our patients.

## PATIENTS AND METHOD

Thirty six patients with displaced olecranon fracture were admitted from the emergency and out patient department of Orthopaedic Surgery, Jinnah Postgraduate Medical Centre, Karachi and operated for tension band wiring (TBW). The inclusion criteria for patient in this study were: Olecranon fracture with displacement more than 3 cm, more than 14 years of age with no intercurrent illness and injury of less than 4 weeks duration with no association of ipsilateral fracture of humerus, radius or ulna. Medically unfit, contaminated or infected wound patients were excluded from the study.

**Operative Procedure:** After exposing the fracture site both fracture fragments were accurately reduced and held in position by malleolar clamp. Two 'K' wires 2 mm diameter were drilled 1 cm apart and parallel to each other, well past the fracture site. A transverse hole was made 3.5 cm distal to the fracture site near the posterior cortex of ulna. An 18 gauge wire was passed through the hole and crossed over the protruding ends of the 'K' wires to form figure of 8 loop on the posterior surface of the proximal ulna leaving two loops one on either side of ulna.

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These loops were tightened to produce equal compression on both sides. The proximal ends of 'K' wires were bent to 180° to form hooks which were then hammered down in the superior surface of olecranon. Wound was closed over suction drain and dressed. Gentle protected movements were started on the third post operative day in 32 patients and in the remaining 4 with severely comminuted fracture, semi-rigid fixation and POP back slab was applied for 2-3 weeks.

Patients were called every two weeks for the first 3 months and then every month for a year. Patients were examined and evaluated on the parameters of pain and its intensity, swelling, tenderness and range of movements. They were examined radiologically for signs of union or loss of fixation. The patients' results were assessed on the basis of Helm, Hornby and Miller criteria<sup>9</sup> as under:-

- Good: No pain or occasional mild pain and loss of motion at elbow less than 15°.
- Fair: Moderate pain and loss of motion at elbow between 15° and 30°.
- Poor: Constant pain and loss of motion at elbow more than 30°.

## RESULTS

Out of 36 patients with displaced olecranon fracture operated for TBW, 24 were males and 12 females, (male to female ratio 2:1). Their ages ranged from 14 to 68 years, with the mean age of 38.5 years. 78% of patients belonged to age group 20 to 50 years whereas 5.5% were adolescents below the age of 20 years and 16.5% were above the age of 50 years. Duration between the injury and operation ranged from one day to 28 days. On the basis of Hotchkiss<sup>10</sup> classification for the type of fracture, distribution of patient was as follows:-

Type I- four patients, Type II (transverse)-4 patients, Type II (Oblique) -6 patients, Type III -10 patients and Type IV -12 patients.

In 30 patients fracture union was achieved in 3 months, whereas in 5 patients delayed union took 5 months. One patient developed non-union. Union time ranged from 9 weeks to 21 weeks, mean 11.5 weeks. Twenty nine (80%) scored good to fair results (44% good and 36% fair). (Table I and Table II.) Among patients who scored fair, three developed superficial infection that cleared up after debridement, irrigation drainage and appropriate antibiotics. There was high rate of minor complications related to the implants, twelve (33%) patients complained of pain due to irritation by implant. Six (16.5%) had skin breakage over the hook of 'K' wire and 4 (11%) had proximal migration of 'K' wires.

## DISCUSSION

In our study olecranon fractures were found to be more

**TABLE-I** CORRELATION OF RESULTS WITH TIME DURATION BETWEEN INJURY AND OPERATION

Time duration	No. of Patients	Good	Fair	Poor
One day	06	03 (50%)	02 (33%)	01 (17%)
1 to 4 day	14	07 (50%)	06 (43%)	01 (7%)
4 to 14 day	08	04 (50%)	02 (25%)	02 (25%)
2 weeks to 4 weeks	08	02 (25%)	03 (37.5%)	03 (37.5%)
Total No. of patients/ percentage	36	16 (44%)	13 (36%)	07 (20%)

**TABLE-II** CORRELATION OF RESULTS WITH TYPE OF FRACTURE

Fracture type	Good	Fair	Poor
Type I (n=4)	02 (50%)	01 (25%)	01 (25%)
Type II (n=12)	05 (50%)	03 (30%)	02 (20%)
Type III (n=10)	03 (30%)	04 (40%)	03 (30%)
Type IV (n=12)	06 (50%)	05 (42%)	01 (8%)

common in young males. These findings are similar of the studies of Eriksson<sup>11</sup>, Macko and Szabo<sup>12</sup>, Eid and Elhusseiny.<sup>7</sup> However, the incidence of age and sex is different in the study of Larsen and Jensen<sup>13</sup> where 70% of patients were female and 60% of patients were above the age of 60 years. Age and sex distribution in the study of Joshi<sup>14</sup> showed more men in younger age group and more women in the older one. This may be due to the fact that in our society older women tend to stay at home.

Untreated displaced fractures of olecranon lead to higher rate of non-union or fibrous union leading to decreased strength of triceps. Similarly malunited fractures lead to higher incidence of incongruence that ultimately ends in persistent pain, decreased range of functional movement and degenerative arthritis. Therefore, accurate anatomical reduction is essential to prevent complications and achieve good functional results. This is only possible with rigid or semi rigid fixation of olecranon fracture within two weeks of injury. We achieved 80% good to fair functional range of movements in our cases by adherence to the principles of early and rigid fixation and allowing early mobilization of elbow.

Our results were also good in comminuted fractures operated with semi-rigid fixation and protected cast for 2-3 weeks. Our results were comparable to the study of Macko and Szabo<sup>13</sup> and Eid and Elhusseiny.<sup>7</sup> Deliyannis<sup>8</sup> and were good to fair in 73% of patients with similar methodology. The results were much better with Helm, Hornby and Miller<sup>9</sup> who showed good to fair results in 90% cases with the use of non-sliding pins instead of 'K'

wire in tension band wiring.

Mean union time in our study was 11.5 weeks. Similar were the observations of Macko and Szabo<sup>12</sup> who achieved union in 13 weeks whereas union time was 6 weeks in the study of Larsen and Jensen.<sup>13</sup> However, the number of cases in both studies were small i.e. 20 cases. Non-union was encountered in one (2.8%) patient, as in the studies of Macko and Szabo<sup>12</sup> and Eid and Elhusseiny.<sup>7</sup> However, non-union was 0% with Larsen and Jensen. Implant related complications as pain due to irritation by implant, skin breakage and migration of implant were moderate 33%, 16.5% and 11% respectively, which seems to be more significant than other studies like Gartsman, Sulco and Otis<sup>6,5</sup> who encountered similar problems in 4%, 2% and 2% cases respectively. However, much high incidence of these problems 80%, 20% and 15% were observed in the cases of Macko and Szabo.<sup>12</sup> Our study finding has higher resemblance to the study of Macko and Szabo<sup>12</sup> as compared to other studies. The higher rate of minor complications may be related to similar technical faults which can be significantly minimized by improving the technique and care taking.

Displaced olecranon fractures treated by TBW by Weber Vasey technique lead to good functional results in all types of fractures. Fractures treated after two weeks of injury produced less good results (25% good and 37.5% fair) on the basis of criteria laid down by Helm Hornby and Miller. However majority of patients gained 40° to 50° of useful range of motion for routine work. The higher rate of minor complications can be minimized by improving the technique, care taking steps and early fixation.

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# CHEMICAL ANALYSIS OF URINARY CALCULI IN CHILDREN

JAMSHED AKHTAR, FARHAT MIRZA, SOOFIA AHMED, YAQOOT JEHAN,

MOHSINA USMANI\*, ABDUL AZIZ

## ABSTRACT:

*A study of 23 cases of urinary calculi, that were chemically analyzed, showed that most common constituent of the stones removed was oxalate followed by urate. Struvite stones were found infrequently. The lower urinary tract stones occurred more frequently than upper tract calculi and all urates calculi were found in patients less than five years of age. These findings differ from those reported from other developing countries*

**KEY WORDS:** Urinary calculi, Chemical analysis, Children

## INTRODUCTION

In most developing countries urolithiasis is a major cause of end stage renal disease. Metabolic causes have been reported in 12-33% of children with upper urinary tract stones in various western series.<sup>1</sup> In a study from Karachi the incidence of metabolic calculi was 8.5%,<sup>2</sup> while Hari et al from India reported an incidence of 50%<sup>3</sup> in upper urinary calculi. Similarly incidence of infection as an aetiological factor varied from as low as 2% to 30% and above.<sup>4</sup> The data from other parts of the world and even from same country may show regional variations. To be able to plan future strategy, it is important to know the local characteristics of the disease pattern. This study was conducted in this background.

## PATIENTS AND METHODS

Twenty-three patients with urolithiasis, who underwent open surgical removal of calculi, in whom it was possible to get chemical analysis of the stone done, were included in this study. This investigation is not available in NICH and had to be done from outside. As it is costly that is the reason why it was not possible to obtain it in all the cases. In addition, demographic data related to the patients was collected on a pre-designed proforma.

## RESULTS

In a six months period it was possible to obtain chemical analysis of calculi in 23 patients. Total number of patients operated during this period was forty. There were 18 male

and 5 female patients. The age ranged from 1 to 14 years with the mean of 7.5 years. Major symptoms in these patients were dribbling of urine, dysuria and haematuria. Five patients presented with retention of urine while history of lithuria was present in three cases. The types of stone and their location is given in Table I. Oxalate was the commonest constituent of all the calculi and was predominantly seen in vesical stones. Urate was second in frequency and all calculi were present in patients of less than five years of age.

TABLE-I Constituent	LOCATION/TYPE OF URINARY TRACT STONES			
	Oxalate	Urate	Calcium ammonium phosphate	Mixed variety
	n	n	n	n
<b>Upper</b>				
<b>Urinary tract</b>				
Right kidney	1	2	-	-
Left kidney	1	2	-	1
Ureter	1	-	-	-
<b>Lower</b>				
<b>urinary tract</b>				
Urinary bladder	9	1	2	-
Urethra	1	-	-	2
Total	13	5	2	3

## DISCUSSION

Urolithiasis is an ancient condition, the evidence of which can be found in Egyptian mummies.<sup>5</sup> The incidence from western literature is reported as 1-5% of which only 1-5% of patients are younger than 15 years.<sup>6</sup> Formation of calculi in urinary tract is a complex physical process that starts with saturation of urine with solute and then pro-

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gressing through the stages of supersaturation. Nucleation results in production of crystals that following aggregation lead to stone formation. Understanding the mechanism of stone formation helps in developing treatment strategy.<sup>7</sup>

The pattern of urolithiasis varies in different geographical regions. With decline of endemic calculi (usually found in urinary bladder) in industrialized countries, the incidence of nephrolithiasis has increased. Similar situation is also seen in affluent societies of developing countries. These two conditions have distinct aetiology and endemic calculi are frequently seen in children who are consuming a cereal-based diet lacking animal proteins.

The incidence of pure calcium oxalate stones in United States is about 33% while in India it is almost 90%.<sup>8</sup> In our study the oxalate stones were found in 57% cases. The struvite stones, also known as triple phosphate stones, form in alkaline urine that is produced by urease producing bacteria. In our study the number was about 9%, lower than that reported from US where its incidence is about 15%.<sup>9</sup>

Urolithiasis in childhood is of diverse aetiology requiring carefully planned individualized diagnostic and management protocols. The optimal care of these patients in addition to removal of calculi, include measures for prevention of recurrent stone formation. Treating physicians by

knowing the constituents of calculi can approach with a vast armamentarium of surgical and medical techniques. Lot of effort is required in managing this preventable condition that is draining significant amount of health allocated budget.

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# RADIOLOGICAL INVESTIGATIONS OF BACKACHE IN PATIENTS OVER 30 YEARS OF AGE

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## ABSTRACT:

*The role of radiology and imaging in the recent era cannot be denied in the current medical practice. The article is an attempt to introduce various modern imaging modalities that can be of immense help in alleviating the sufferings of patients suffering from backache. It was a multicentre retrospective study over a period of 10 months. The common causes of backache were studied with the conventional as well as advance techniques. The age chosen for the study was above 30 years after which the backache is a common problem, especially in females.*

**KEY WORDS:** Backache; Imaging

## INTRODUCTION

Backache is a common problem with industrial and office workers. In industry, this is the major cause of loss of working days.<sup>1</sup> According to a paper recently presented at the Congress of International Commission on Occupational Health in Nice, France, it was reported that in 1988 there were 22.2 million cases of backache among workers of the United States and 543.4 million working days were lost as a result. The cost to industry and economy is obviously enormous. Most attacks of backache are of short duration and more than 80% of the patients were back to work within 8-10 weeks, only less than 10% become chronic.<sup>2</sup>

Backache is one of the common ailments faced apart from Koch's disease in our country. It results in great loss of working hours of an individual.<sup>3</sup> The radiological investigation of backache, specially x-rays of lower lumbar spine, may be the second most common investigation requested.

The purpose of the study is to highlight the role of modern modalities in diagnosing accurately the causes of backache and to compare the modalities like plain x-rays, myelography and CT myelography with latest 3D reconstructed images, MRI and isotope studies. This is going to help the clinician to switch over to the right modality and

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reduce unnecessary expenditure incurred by a patient by asking for a series of tests and not reaching a proper and accurate diagnosis.

## MATERIAL AND METHODS

A multi-centre study was carried out at 4 centres including Departments of Radiology, Civil Hospital/Dow Medical College, Abbasi Shaheed Hospital/Karachi Medical and Dental College, and two private Diagnostic Centres from November 1994 to August 1995. The two hospitals are equipped, apart from conventional radiological systems, with CT scan. Myelography is performed at three of the four centres. Isotope studies were carried out in Atomic Energy Medical Centre, Jinnah Post Graduate Medical Centre, Karachi.

X-rays of patients over the age of 30 years were sorted out and the ones with positive findings were collected. Patients in whom findings, other than clear cut osteophytes, were not followed up. Patients with positive findings other than simple degenerative disease were followed up with clinical history, laboratory investigations as well as further radiological investigations like myelography, isotope study, (where indicated), CT myelography and those who could afford, MRI.

## RESULTS

During the period November 1994 to August 1995, 1700 patients came to the above centres for radiological examination of lumbar spine. From these, patients above the age of 30 years were selected. The number of male patients were 365 (36.5%) and female 635, (63.5%) mak-

ing a total of 1000. The Male to female ratio was 1:1.5. Their age distribution is shown in Table I.

Age group	PATIENT AGE DISTRIBUTION	
	Males	Females
30 - 40 Years	102	168
40 - 50 Years	137	278
50 - 60 Years	76	82
60 - 70 Years	32	64
> 70 Years	18	43
<b>TOTAL:</b>	<b>365</b>	<b>635</b>

The number of patients targeted was achieved within the specified period. The study encompasses all the socio-economic classes, both coming to the government hospitals as well as to private set-up. The majority of patients showed multiple pathologies on single investigation. The patients who presented only with congenital/normal variants, but with normal study were 54. The normal variants found included: Spina Bifida Occulta-8 patients and 43 patients with sacralization, out of which 13 were unilateral, 40 were bilateral while Schmorl's nodes were seen in 3 patients. The most common finding in the younger age group (30-40 years) was early lumbar spondylosis, while 57 patients presented with history of acute trauma. The radiological finding included reduced vertebral height at various levels, spondylolisthesis, and defects in the pars intra-articularis. The common cause included either road accident, mainly motor cycle or a history of fall from certain height. The motor cycle accidents were either caused by speed or by sudden jerks with speed breakers and the patients seen were both the driver himself or the rider at the back (mostly females). At least 49 patients in this age group were seen with fire arm injury. In this age group, 3 female patients presented with history of trauma but were pregnant, therefore extra care was taken in these patients. Depending on the need of the patients at the time of presentation they were referred for MRI. Eleven patients presented with a history of trauma in the past and in them further investigation like MRI was carried out to find out about the cause of backache as a sequel of trauma. In 4 patients post traumatic syrinx was found at the level above the trauma, while post traumatic gliosis was seen in 2 patients along with reduced vertebral height at single or multiple levels in both the groups. Seventeen patients were also referred for CT scan of lumbar spine to evaluate traumatic fracture and the impingement of fragment fracture over the spinal cord and measurement of the spinal canal, whether stenosed.

In the second age group, the most common finding included lumbar spondylosis patients, while 32 patients showed reduced vertebral height at single or multiple levels. The cause in males included previous trauma and in females osteoporosis, either nutritional or post-

menopausal, along with the past history of trauma. Fifteen patients showed metastatic deposition (7 males; 8 females) which were later referred to isotope study. Spondylolisthesis was found in 10 males and 23 females. Thirtyone patients showed only generalised osteopenia, out of which 28 were females and 3 males. Sixty one patients showed reduced vertebral height, either of single or multiple vertebrae. Reduced disc space and changes of infection were also significant. Vertebral infections included 13 patients with Pott's Disease, 4 patients also had positive chest x-ray for tuberculosis.

Aspiration of paravertebral abscesses was performed under ultrasound guidance in 4 patients while only 7 patients, who could afford, had CT guided aspiration. Forty nine patients went through myelography, with water soluble contrast medium, 13 were taken to CT scan after myelography to perform CT-myelography. The most common finding on myelography included disc herniation, while those taken for CT myelography showed no additional information, except lumbar stenosis in addition to already diagnosed disc bulge (on myelography).

MRI investigation was requested in 38 patients, where it was found that the other radiological investigations were negative and the patient was still complaining of backache and where it was thought to give additional information than the conventional modalities. It was found to have been much more informative in certain conditions like evaluation of sequel of trauma, evaluation of disc herniation and its type along with levels, if it was at multiple levels and to evaluate the spinal tumours, although none of the primary spinal tumours were seen in our study except solitary case of Haemangioma. The distribution of backache diseases and their age prevalence shown in Table II.

Table III shows comparison of various diagnostic modalities after conducting the study.

## DISCUSSION

Plain x-rays remain the main stay in the first and initial examination for any patient complaining of backache, to be taken carefully in case of serious patients. Isotope studies are of extreme benefit in cases where skeletal surveys is required to evaluate metastatic disease, as well as occult inflammatory lesions and is more sensitive than the plain radiology. Myelogram remains the best method of investigation in order to evaluate the degenerative disc buldges, where Magnetic Resonance Imaging or Computerized Tomography is not available. After plain X-rays, CT scan of the selected levels, demonstrates the involvement of bone and spinal cord in a trauma patient as well as for evaluation of spinal stenosis. MRI is the best modality for evaluation of diseases of spine, including degenerative, inflammatory/infective, cord tumours

TABLE-II DISTRIBUTION OF DISEASES PREVALENCE AND THEIR AGE PREVALENCE

Age Group	30-40		40-50		50-60		60-70		>70		Total
Sex	M	F	M	F	M	F	M	F	M	F	Total
<b>SPINAL CAUSES</b>											
Lumbar Spondylosis	10	48	40	66	13	16	3	7	2	1	206
Spondylolisthesis	7	3	8	6	1	10	1	2	0	2	40
Retrolisthesis	5	2	5	7	1	1	0	4	0	0	25
Disc Space Narrow	7	11	10	20	7	14	6	6	6	15	102
Infection:	2	3	2	8	2	2	0	2	0	0	21
- Acute	2	3	1	4	0	0	0	0	0	0	10
- Chronic	6	8	2	6	1	2	0	0	0	0	25
Osteopenia	0	1	3	16	0	3	0	3	0	5	31
Reduced Vertebral Height	8	7	9	23	5	4	0	2	1	0	59
Spinal Stenosis	2	1	1	0	3	2	0	0	0	0	9
<b>TUMOURS:</b>											
Primary	0	1	0	0	0	0	0	0	0	0	1
Secondary	1	0	2	3	1	0	2	3	1	2	15
Total: 519	50	88	83	159	34	54	12	29	10	25	544
Percentages:	9.2	16.2	15.3	29.2	6.3	9.9	2.2	5.3	1.8	4.6	-
<b>DEGENERATIVE DISEASE:</b>											
Multiple Levels	0	0	25	42	22	0	13	22	2	1	127
L3-L4	0	0	0	5	1	2	0	0	0	0	8
L4-L5	0	0	0	0	2	0	0	0	0	0	2
L5-S1	0	0	0	0	5	0	0	0	0	0	5
Total: 141	0	0	25	47	30	2	13	22	2	1	142
Percentages:	0.0	0.0	17.6	33.1	21.1	1.4	9.2	15.5	1.4	0.7	-
<b>DISC BULGE</b>											
L3-L4	1	1	2	2	1	2	0	0	0	0	9
L4-L5	3	2	2	3	3	3	1	0	1	3	21
L5-S1	2	5	3	13	1	3	3	2	3	4	39
Multiple Levels	1	3	3	9	2	6	2	6	2	8	42
Total:	96	7	11	10	27	7	14	6	8	6	151
Percentages:	6.3	9.9	9.0	24.3	6.3	12.6	5.4	7.2	5.4	13.5	-
<b>EXTRA-SPINAL CAUSES:</b>											
Renal Calculi	2	4	4	5	1	3	1	3	0	1	24
Renal Cysts	2	2	2	4	2	2	0	1	0	0	15
Renal Tumour	4	0	1	1	1	0	0	0	0	0	7
P.I.D.	0	7	0	2	0	0	0	0	0	0	9
Fibroid	0	7	0	10	0	0	0	0	0	0	17
Ovarian Cysts	0	5	0	2	0	0	0	0	0	0	7
Total: 78	8	25	7	24	4	5	1	4	0	1	79
Percentages:	10.1	31.6	8.9	30.4	5.1	6.3	1.3	5.1	0.0	1.3	-
Normal (Total 70):	29	29	7	5	0	0	0	0	0	0	70
Percentages:	41.4	41.4	10.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	-
<b>NORMAL :</b>											
Sacralization											
- Unilateral	1	3	2	5	0	3	0	0	0	0	-
- Bilateral	4	9	3	9	0	2	0	1	0	1	-
Spina Bifida Occulta	1	2	0	2	1	2	0	0	0	0	-
Schmorl's Nodes	2	1	0	0	0	0	0	0	0	0	-
Total 53	8	15	5	16	1	7	0	1	0	1	53
Percentage	14.8	4.3	2.9	7.1	0.0	4.3	0.0	0.0	0.0	0.0	-
<b>GRAND TOTALS:</b>											
	102	168	137	278	76	82	32	64	19	43	3

extent, demyelinating disease and for evaluation of sequel of trauma, but is expensive and available at few places, being advantageous of having no radiation. Sometimes all the investigative modalities are negative, but the patient still complains of backache. Most of the time, there is a use of multiple modalities in order to reach a conclusive diagnosis.

Degenerative disc disease is more common in female patients, other cause include osteopenia, in addition to

TABLE-III COMPARISON OF DIAGNOSTIC MODALITIES

Pathology	Plain Film	Myelography	CT	MRI
<b>Trauma:</b>				
Fractures	++	+/-	+++	++
Intraspinal Bone				
Fragment	+/-	+	+++	++
Haematoma	-	+/-	++	+++
Acute Disc Bulge	-	++	++	+++
Sequel of Trauma	+	+/-	++	+++
<b>Degenerative:</b>				
Osteophytosis	+++	++	+++	++
Disc Bulge/				
Herniation	-	++	++	+++
<b>Bone Density</b>				
	++	-	+++	+/-
<b>Osteoporosis</b>				
	++	-	+++	-
<b>Spinal Stenosis</b>				
	+/-	++	+++	+++
<b>Infections</b>				
	+/-	-	++	+++
<b>Tumours:</b>				
Primary	+	+	++	+++
Secondary	+	+/-	++	+++
<b>Congenital Anomalies</b>				
	++	+/-	++	+++

weight of the patient. Trauma is inflicted most commonly in male patients especially in younger age group. One has to be on the look out for extraspinal cause in cases where no spinal cause can be depicted. Occupation and dietary habits also play some role in the cause of backache.

Importance of history thorough clinical examination and finalizing the necessity and request of the examination is the responsibility of the clinician, because to a point appropriate imaging is important to save time and suffering of the individual. Every patient with the history of backache, needs not to be evaluated with plain X-rays of lumbosacral spine right away. The newer modalities although have increased the cost of investigations, but have definitely improved the outcome and sufferings of backache due to early diagnosis and direct methods of treatment.

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# CLINCO PATHOLOGICAL EXPERIENCE OF GALL BLADDER CANCER IN NORTHERN SINDH

ABDUL RAHIM SIYAL, SHER MOHAMMAD SHAIKH, QAMARUDDIN BALOUCH, TANWEER

AHMED SHAIKH, ABDUL WAHEED SURAHIO

## ABSTRACT:

*Carcinoma gall bladder has a poor prognosis despite surgical resection of the tumour.<sup>1,3</sup> A prospective study was planned to evaluate carcinoma gall bladder according to its clinicopathological presentation. Its frequency among gall bladder diseases was 5.21% with male to female ratio 1: 1.22. Average and median ages were 53.43 years and 55 years respectively. Peak age group was 5th decade. Three most common presenting complaints were right hypochondrial pain (67.24%), vomiting (34.48%) and lump right hypochondrium (27.58%). Most common macroscopic appearance was cauliflower like mass. Gall stones were associated with 39.65% cases. Most of the tumours were adenocarcinomas, majority in advanced histological grades. Glandular pattern was noticed in 27 cases and papillary pattern in 21 cases. Compared to developed countries our patients were more than a decade younger.*

**KEY WORDS:** Carcinoma , Gall bladder.

## INTRODUCTION

Carcinoma gall bladder is usually asymptomatic in its early course and most often its symptoms are masked by chronic cholecystitis. Most patients present with an advanced disease.<sup>1,3</sup> It is usually detected incidentally at the time of cholecystectomy for other reasons.<sup>4,6</sup> It is estimated that about 70-80% patients present late and their tumours are unresectable.

Even when radical resection is performed in locally advanced disease, 50% of patients have microscopically positive margins indicating residual disease.<sup>4</sup> Most surgeons in the west are pessimistic about surgical treatment. They consider that the patients who can expect a favourable outcome are those with incidental gall bladder carcinoma, first diagnosed by histopathological examination of a gall bladder, removed for a presumed benign condition or those with early polypoid gall bladder carcinoma detected by ultrasonography.<sup>6</sup> Purpose of this study was to evaluate carcinoma gall bladder according to its clinicopathological presentation in patients who were operated at the teaching hospital

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of Chandka Medical College, Larkana, between January 1992 and December 1998.

## MATERIAL AND METHODS

The study was carried out at the Department of Pathology in collaboration with Department of Surgery Chandka Medical College Larkana. This, a teaching hospital, being largest in the region, caters for most of the Northern Sindh and adjoining areas of Baluchistan. Total period of study was seven years from January 1992 to December 1998. All tissues of gall bladders were fixed in 10% formalin and were processed routinely for preparation of haematoxylin and eosin (H & E) stained sections. Histological diagnosis was made on light microscopic examination according to criteria given in a text books of Pathology.

## RESULTS

Total 1112 specimens of gall bladder were received during the stipulated period. Malignancy was detected in 58 cases (Table - I).

**TABLE-I** OVERALL DISTRIBUTION OF GALL BLADDER DISEASE ACCORDING TO DIAGNOSIS AND SEX.

Disease	Male	Female	No	%
Chronic cholecystitis	130	668	798	71.81
Chronic cholecystitis with cholelithiasis	15	217	232	20.86
Carcinoma	14	21	35	3.14
Carcinoma with cholelithiasis	04	19	23	2.06
Pyocele	03	10	13	1.16
Mucocele	02	06	08	0.71
Cholestriolosis	---	03	03	0.26
<b>Total</b>	<b>168</b>	<b>944</b>	<b>1112</b>	<b>100</b>

All malignancy cases were studied according to age, sex, clinical presentation and histopathological features. Among these patients 18 were males and 40 were females. The male to female ratio was 1: 2.22. The ages of the male patients ranged from 28 to 65 years and those of female patients ranged from 25 to 75 years. Average age was 53.71 years in males and 53.15 years in females. The median age of both the sexes was 55 years. The most commonly involved age groups were 4th and 5th decades with peak age in the latter (Table II).

**TABLE-II** DISTRIBUTION OF CARCINOMA CASES ACCORDING TO SEX AND AGE GROUPS.

Sex	Age Groups						Total	%
	21-30	31-40	41-50	51-60	61-70	71 +		
Male	01	--	04	12	01	--	18	31.03
Female	01	02	15	17	04	01	40	68.97
<b>Total</b>	<b>02</b>	<b>02</b>	<b>19</b>	<b>29</b>	<b>05</b>	<b>01</b>	<b>58</b>	<b>100</b>
<b>%</b>	<b>(3.44)</b>	<b>(3.44)</b>	<b>(32.75)</b>	<b>(50.03)</b>	<b>(8.62)</b>	<b>(1.72)</b>	<b>(100)</b>	

Presenting complaints of the patients are listed in Table III.

**TABLE-III** PRESENTING COMPLAINTS OF THE CARCINOMA PATIENTS.

Complaint	No	%
Pain right hypochondrium	39	67.24
Vomiting	20	34.48
Lump right hypochondrium	16	27.58
Loss of appetite	12	20.68
Fever	11	18.96
Jaundice	08	13.79
Indigestion	05	8.62
Constipation	04	6.89
Distention of abdomen	03	5.17
Generalized weakness	03	5.17

According to the gross appearance, 41 (70.7%) cases presented as diffuse thickening of the wall of the viscus (infiltrative variant), 12(20.68%) cases as cauliflower like fungating masses (polypoidal variant) and 05 (8.62%) cases as nodular swellings. Gall stones were recovered in 23(39.65%) cases of whom 04 were males and 19 were females. Majority of the tumours (82.75%) were adenocarcinomas. Most of these tumours were of poorly differentiated grade. Majority of the tumours were arranged in glandular (27 cases) and papillary (21 cases) patterns. All

those cases of cholecystectomy where liver bed resection was done (09 cases) revealed presence of tumour tissue in the liver.

## DISCUSSION

In this study frequency of malignancy in gall bladder disease was 5.21%, which is much higher than the western figures (1-2%), cited by syed Razi Mohammad et al<sup>9</sup> but it is in accordance to those reported from Lahore (5.95%)<sup>8</sup> and Karachi (6.0%).<sup>9</sup> The frequency is still higher in the studies from Rawalpindi (8.0%)<sup>5</sup> and Hyderabad (8.69%).<sup>10</sup> Although male to female ratio is variable in various studies, the female preponderance is uniformly observed by most of them.<sup>4,5,8,11</sup> However a Saudi Group exhibits an equal involvement of both the sexes<sup>12</sup>. Average (53.32 years) and median (55 years) ages and the peak age groups (5th decade) of the present study are more or less comparable to those of other studies from the country.<sup>3,8</sup> But when compared to Japan<sup>6</sup>, a developed country, our patients are more than a decade younger.

Most common presenting complaint of our patients was right hypochondrial pain (67.24%) which compares well with other studies.<sup>5,10</sup> However jaundice was more common in those studies (29% - 50%) than in our study (08%), whereas right hypochondrial mass was more common in our study. These differences could be due to variable association of other gall bladder diseases such as gall stones and chronic cholecystitis. According to gross appearance, infiltrative type was more common in the present series where as polypoidal tumour was more frequent in Japanese series.<sup>6</sup> This difference may be due to sample error or it may reflect the actual higher incidence of infiltrative variant in our population. Studies reveal association of gall stones with carcinoma gall bladder.<sup>6,8,13</sup> In the present series 39.65 cases were associated with gall stones. The single largest histological type of carcinoma gall bladder in the present series was adenocarcinoma, most of which were in advanced histological grades. This finding is in accordance with other studies.<sup>8,11,13</sup> We conclude that the carcinoma of gall bladder in the present series is more or less similar to that of other studies, but our patients are more than a decade younger than those of a developed country (Japan). Possible reason for this discrepancy could be overall low survival rate in the underdeveloped countries. Other possibility could be exposure of our patients to some carcinogenic agent at an early age.

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# THE RELEVANCE OF PROSTATIC ANATOMY TO THE RESULTS OF PROSTATECTOMY ACCORDING TO THE SURGICAL APPROACH

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## ABSTRACT:

*An autopsy study of anatomy of prostates has demonstrated that adenomatous tissues lies inferior to the verumontanum in all cases. Distal to the verumontanum the proportion of prostatic tissue varies from 5 to 40%. In a series of 120 patients the post-operative urodynamic study showed that in the transurethral resection group the flow rate was lower and residual urine higher than in the open prostatectomy group. Though by the transurethral route prostatectomy is less complete due to residual sub-verumontanal prostatic tissue, but by restricting the resection to supra-verumontanal tissue many patients are spared post-operative stress incontinence.*

**KEY WORDS:** Benign prostatic hyperplasia, Transurethral resection of prostate, Open prostatectomy.

## INTRODUCTION

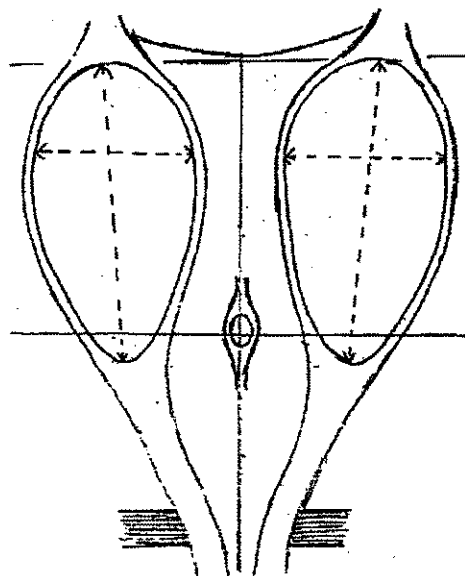
In the operation of transurethral resection of prostate (TURP), the verumontanum is an important landmark. The verumontanum is thought to represent the lower limit of the prostate lobes and therefore the limit of resection of prostate adenoma. Transurethral resection is carefully restricted to supra-verumontal tissue to avoid the risk of post-operative urinary incontinence. Diagram in urological texts show verumontanum to lie in a variety of different positions, from the lower limit of prostatic lobes<sup>1</sup> to the mid prostatic urethra.<sup>2</sup>

The relevance of the position of verumontum to prostatectomy led to an anatomical study of the prostate and a study of thurmodynamic findings before and after prostatectomy. The results of the two studies are presented.

## PATIENTS AND METHODS.

Anatomical study of the complete prostate of 30 cadavers, age 50 to 75 years, was performed from February 1993 to December 1999. The bladder and prostate were included in the specimens removed at post-mortem. The bladder was opened to demonstrate the internal meatus. The prostatic urethra was opened by anterior longitudinal incisions and the lobes separated.

A diagram of each dissected specimen was prepared. Recorded measurements were lobe length, lobe width, and distance from the verumontanum to the upper limit of the lobe and distance form the verumontanum to the lower limit of the lobe. The prostate was then divided into 4 quadrants through the apex of the verumontanum (Fig-1) and each quadrant of the prostate dissected and weighted.



**Figure 1** Diagram to show the measurements and lines of incision used during prostatic dissection.

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The proportion of tissue below the verumontanum to the total weight of the lobe was recorded as under: -

Right lobe	21.8% $\pm$ 10.2
Left lobe	21.6% $\pm$ 12.4
Total tissue of both lobes	22.2% $\pm$ 10.5

Prostatic symptoms were assessed by urodynamic studies before and after prostatectomy in 120 patients and reassessed at six months post-operatively. In this study 90 patients underwent TURP and 30 had open prostatectomy (retropubic 18, transvesical 10).

## RESULTS.

In the majority of dissected specimens the lobes were symmetrical. A significant proportion of the prostate adenoma was below the verumontanum (Table I). The proportion was from 5 to 40% of the total adenoma weight.

TABLE-I DISTRIBUTION IN 30 CADAVERS WITH VARYING PERCENTAGE OF PROSTATE BELOW THE VERUMONTANUM		
Percentage of prostate below veru	Percentage of patients	(n-30)
5-10	10	(3)
10-20	50	(15)
20-30	20	(6)
30-40	20	(6)

It was evident from a comparison of the lobe length and lobe weight that as lobe length increases the weight increases proportionally (Table II)

TABLE II COMPARISON OF LOBE LENGTH WITH LOBE WEIGHT		
Lobe Length (cms)	No. of Specimens	Mean Lobe weight (Grams)
2.0	4	10.0 $\pm$ 1.7
2.5	14	12.7 $\pm$ 3.8
3.0	28	14.6 $\pm$ 5.4
3.5	4	16.3 $\pm$ 5.2
4.0	3	20.8 $\pm$ 8.1
4.5	4	21.6 $\pm$ 4.5
5	3	22.7 $\pm$ 5.3

Urodynamic studies data of these 120 patients, showed that there were significant differences between those who had undergone TURP and those who had undergone open prostatectomy. Maximum urinary flow rate was significantly higher in open prostatectomy than in TURP patients ( $p < 0.05$ ). Average urine flow rate in ml/sec before and after TURP and open prostatectomy are given below: -

	TURP	Open Prostatectomy
Pre-operative	6.6 (Range 3-20)	7.5 3-18
Post-operative	18.4 (8-30)	22.8 (10-32)

Residual urine estimation demonstrated less post-operative residual urine in the patients treated by open prostatectomy ( $p < 0.02$ ). In either group no significant difference was seen in symptomatic results. Average residual urine (ml) before and after TURP and open Prostatectomy is given below: -

	TURP	Open Prostatectomy
Pre-operative	180 (Range 0-800)	260 (0-1200)
Post-operative	65 Range (0-360)	27 (0-120)

## DISCUSSION

The normal prostate measures between 3 and 4 cm at its widest portion, 4-6 cm in length, 2-3 cm in the thickness and weighs about 20g.<sup>(3)</sup> The prostatic urethra is about 3 cm long and extends through the prostate from base to the apex. The prostatic urethra is divided into proximal and distal segments of approximately equal length by an abrupt anterior angulation of its posterior wall at the mid point between the prostatic apex and bladder neck.<sup>(4)</sup> The angle of deviation is approximately 35 degrees, but can be quite variable and tends to be greater in men with nodular hyperplasia.<sup>5</sup>

The characteristic crescentic shape of prostatic urethra in cross section is due to the presence on the posterior wall of narrow median longitudinal ridge formed by an elevation of the membrane and subjacent tissue called the urethral crest. About the middle of the length of urethral crest, the verumontanum (or colliculus seminalis) forms an elevation on which the slit like orifice of prostatic utricle is situated. On each side of or just within, this orifice are the openings of the two ejaculatory ducts. Below the openings of the ejaculatory ducts the distal prostatic urethra possesses a thin coat of smooth muscle consisting of both circularly and longitudinally oriented muscle bundles that are themselves continuous with the strands of smooth muscle pervading the prostate gland. The distal segment is also surrounded by a sphincter formed of small diameter striated muscle fibres separated by connective tissue, which represent proximal extension of the external sphincter located distal to the prostate apex.<sup>(6)</sup>

The verumontanum is an important landmark during transurethral resection of the prostate (TURP). If the resection is carried distal to the verumontanum, there is risk of incontinence because of damage to the external sphincter. This risk of damage is also present if prolonged diathermy is used near the verumontanum.<sup>(7)</sup>

The urodynamic studies suggest that resections may leave subverumontanum part of prostate unresected. The

difference the 2 operation groups (TURP versus open prostatectomy) is seen in the part of the urethral profile immediately proximal to the main sphincteric peak. After open prostatectomy the presphincteric profile disappears completely. However after TURP the profile characteristically has small presphincteric pressure rise, this rise is thought to be due to residual adenoma.<sup>(6)</sup>

In this study the symptomatic results were not significantly different, although urodynamic study have shown inferior objective results after TURP. The symptomatic results of TURP group suggest that the unresected subverumontanum adenoma be of no importance to the patient. A study of post prostatectomy problems suggest that the unresected adenoma may protect some patients from stress incontinence.<sup>(6)</sup> In a group of 120 patients 7 patients had persistent stress incontinence, 5 of these patients had open prostatectomy. In-patients with weak pelvic floor, removal of the whole prostate by open prostatectomy may lead to stress incontinence even without preoperative damage to the sphincter.

This study suggests that there are no clear landmarks in subverumontanal urethra, making damage to the

sphincter more likely, so the resection of prostate upto verumontanum may protect many patients from stress incontinence without compromising symptomatic relief.

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# EMPHYEMA THORACIS – A CASE FOR EARLY REFERRAL

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## ABSTRACT:

*Acute empyema thoracis is a common thoracic problem with challenging management strategies and a cause of significant morbidity and mortality. We retrospectively analysed 70 cases of acute empyema thoracis referred to our unit from 1996 to 1998 (nearly 13 % of total admissions). In 60% cases the cause was chest injury; 63% of patients reported within a week (Group I) while about 37% patients reported 8 days after developing symptoms (Group II). Most patients were managed by tube thoracostomy alone while 30% cases required decortication. In 10% patients VATS was tried. Average hospital stay and post-operative stay was significantly more in Group II patients, emphasising the importance of early presentation, proper and timely management of chest trauma patients and early referral of patients to specialised units are necessary to reduce the morbidity of acute empyema thoracis patients.*

**KEY WORDS:** *Empyema thoracis, management*

## INTRODUCTION

Empyema thoracis is a common thoracic surgical problem with challenging management strategies. Despite centuries of study, this disease still causes significant morbidity and mortality. The management varies with the duration of disease. Early cases may settle on tube thoracostomies alone, while late cases with thick fibrin peels and multiloculations require thoracotomy and decortication.

The Thoracic Surgical Department of Jinnah Postgraduate Medical Centre is a referral centre not only for patients from Karachi but also from parts of Sindh and Baluchistan. We retrospectively analysed and compared outcome of early and late presentations of empyema thoracis.

## PATIENTS AND METHODS

This study was carried out at the Department of Thoracic Surgery JPMC Karachi, where 617 patients were admitted in two years from December 96 to November 98. Out of these 82 cases were of empyema thoracis, comprising 13% of all admissions. The cases referred to us from outside Karachi were 32% of these. After excluding cases of T.B empyema, our study included only 70 cases of empyema thoracis in two years.

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Diagnosis of empyema thoracis was confirmed with pleural fluid examination and culture. Duration of the disease before reporting to our unit varied from less than 7 days to over 180 days. We divided patients into two groups. Group I consisted of patients presenting within 7 days of empyema formation while Group II consisted of patients with disease of over 8 days duration. The outcome of treatment and hospital stay was compared in the two groups.

## RESULTS

The study included 70 patients, predominantly males, aged between 13 and 70 years, majority of them being under 40 years, as under:-

- |                           |                   |
|---------------------------|-------------------|
| * Group I (within 7 days) | 44 Patients (63%) |
| * Group II (after 8 days) | 26 Patients (37%) |

The commonest cause of empyema thoracis in our series was post traumatic, comprising 48(69%) patients. Out of these 30 patients were secondary to penetrating chest trauma, commonly gun shot injuries, while 18 patients had it secondary to blunt chest trauma. Old patients with multiple rib fractures and chronic bronchitis were more prone to develop empyema. The proportion of cases was the same in both Groups (Table I)

**TABLE-I CAUSE OF EMPYEMA THORACIS IN PATIENTS**

patients (n=30)	
<b>1. Post traumatic</b>	
Penetrating chest injury	30 (43%)
Blunt chest trauma	18 (26%)
<b>2. Post infective</b>	
Post pneumonic	3 (4%)
Spontaneous pneumothorax	4 (6%)
Subdiaphragmatic abscess	
Including anaerobic liver abscess	4 (6%)
<b>3. Post operative</b>	
	11 (15%)

Table-II presents the bacterial isolates in our study. Staph coagulase was the commonest organism isolated, seen in 62% cases followed by E.Coli in 40% cases. In 30 patients 43% a single organism was identified, while in 40 patients (57%) multiple organisms were isolated. The length of period of tube thoracostomy in Group II patients and multiple tube thoracostomies were proportionally related to the finding of multiple organisms on pus culture.

**TABLE II BACTERIAL ISOLATES**

Staph coagulase	62%
E. Coli	40%
Pseudomonas pyocyanous	38%
Proteus	24%
Staph aureus	15%
P.aeruginosa	14%
Klebsiella	13%
Streptococcus	9%
Enterobacter	4%
Acinobacter	2%
Citrobacter	1%
Bacteroids	1%

Treatment initially consisted of tube thoracostomy with appropriate antibiotics in all patients. Video assisted thoracoscopy (VATS) was done in 7 patients, in two of these patients decortication was later required.

Thoracotomy with decortication was done in 21 patients. It resulted in successful final outcome in all cases, though some cases required repeated thoracentesis of loculated fluid or pus even postoperatively.

**TABLE III RESULTS OF TREATMENT**

Procedure	Tube Thoracostomy alone	Settled with Thoracostomy and multiple aspirations	VATS	Decortication
<b>Group I</b>				
44	44 (100%)	32	7	5
<b>Group II</b>				
26	26 (100%)	10	Nil	16

The length of hospital stay was compared in Group I and Group II patients. The average hospital stay was considerably short (23 days) in Group I patients as compared to

40 days in Group II patients. Even after decortication and thoracotomy it was much less, 18 days in Group I as compared to 28 days in the latter group. This emphasises the importance of early decision for thoracotomy and decortication, rather than waiting.

## DISCUSSION

Empyema thoracis is a challenging problem to manage. In our series the leading cause was post traumatic, as compared to a post pneumonic cause illustrated by the study of Le Mense.<sup>1</sup> In his series 56% cases were parapneumonic empyemas in younger age group. In our setting the high incidence of post traumatic empyema reflects inadequate management of chest trauma patients. Many a times patients are referred to us with thoracostomy with an inappropriately small bore tube, like Ryle's tube for a haemo or pyothorax which are insufficient to drain pus.

Study of Sriussadaporn.S et al<sup>2</sup> of post-traumatic empyema thoracis in blunt chest trauma patients revealed that the risk of empyema thoracis increased in elderly patients and in those with prolonged placement of thoracostomy tube. Intensive pulmonary care in elderly patients who sustained chest injury and early removal of thoracostomy tube is recommended in order to prevent the development of empyema thoracic.

In the early exudative phase, the patients of empyema thoracic can be managed with tube thoracostomies, but chest tube drainage sometimes cannot operate effectively, if it is blocked by intra-thoracic loculations.<sup>3</sup> This happens more so with passage of time. In a series of Chan.W et al<sup>4</sup> from Montreal Children's Hospital, after tube thoracostomy 18% had complete drainage, while loculations formed in 64% cases which later resolved. Another 18% cases with persistent loculations required formal decortication. Mandal et al<sup>5</sup> reported 91% cure rate with tube thoracostomy alone. In our study 42 out of 70 patients, i.e. 60% of total patients settled with tube thoracostomy alone while 30% patients required a formal decortication. Patients presenting early in exudative phase of empyema thoracis are likely to settle with tube thoracostomy alone, with shorter hospital stay and minimal morbidity.

Recently Video-Assisted Thoracoscopy (VATS) has been used in the management of early empyema thoracis. It has been found useful in avoiding thoracotomies and reducing the length of hospital stay.<sup>6,7</sup> The advantages of thoracoscopy over limited thoracotomy are enhanced visualisation of the pleural cavity and less post-operative pain and dysfunction.<sup>8</sup> Silen-ML et al<sup>9</sup> We did VATS in 7 patients and it was successful in 5 patients, other 2 patients required decortication.

Temes-RT et al<sup>9</sup> have used intrapleural fibrinolytics along-

with tube thoracostomies in management of empyema thoracis to prevent loculations. They claim 69% success in achieving complete drainage, while others claim only limited success. In late cases thoracotomy with decortication was done. Various indications for decortication in our study include persistent fever, inadequate drainage of pleural space, loculated effusions and retained foreign bodies.

The average post-operative stay in Group I patients, presenting early was 18 days as compared to 28 days for Group II patients presenting late. This is in contrast to the study of Galea-JL et al<sup>10</sup> where the mean post-operative stay was 16 days. The marked difference in the post operative stay of Group I & II patients is evident. Thus morbidity and mortality from empyema thoracis can be significantly reduced with proper and timely management of chest trauma patients. Patients with empyema should be referred early to specialised centres.

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# OSTEOMALACIA – A COMMONLY MISDIAGNOSED CAUSE OF GAIT DIFFICULTY

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## ABSTRACT:

*Osteomalacia is a metabolic bone disorder caused by deficiency of Vitamin D and its active metabolites. We report 46 cases of Osteomalacia diagnosed on the basis of clinical features of bone pain, gait difficulty and muscle weakness, plus biochemical findings of a low or normal serum calcium, low phosphorus and raised serum alkaline phosphatase level. Urinary calcium, phosphorus and serum parathormone levels were also estimated in a few cases. Radiologic features included a typical fuzziness of bone architecture and Looser's zones. Out of 46 cases, 4 were males and 42 females. Age ranged from 13 to 45 years. In 3 males disease was attributed to drugs ( Phenytoin, and Carbamazepine ) and one to renal osteodystrophy. Out of the 42 female patients 4 were diagnosed as Renal Tubular Acidosis, 3 had Neurofibromatosis associated with osteomalacia, 1 had malabsorption with Crohn's disease, 2 had hypophosphataemic osteomalacia, and 2 were diagnosed to be associated with drugs ( Rifampicin, Phenytoin and Phenobarbitone). Eight female patients had onset of symptoms during or after pregnancy ( mostly multiparous ). 10 female patients had history of deprivation of sunshine and low Vitamin D diet (deprivational osteomalacia). In 12 female patients cause could not be ascertained despite search. All showed good responses to Vitamin D or its analogues. The time between the onset of symptoms and presentation to the department of Neurology where they were diagnosed varied from 1 to 4 years. It is essential that the awareness level of the medical community be raised so that unnecessary morbidity from osteomalacia may be prevented.*

KEY WORDS: Osteomalacia, Gait difficulty, Bone pain.

## INTRODUCTION

Osteomalacia (softening of bones) is a disorder characterized by defective mineralization of the organic matrix of the skeleton in adults' primarily due to a deficiency of Vitamin D<sup>2</sup>. It is mentioned in textbooks of medicine as being fairly common in women in "purdah" in oriental countries, living on poor cereal diets, devoid of milk, kept indoors and seldom seeing the sun. How common is it locally? Sufficient data is not available to ascertain the prevalence of this easily preventable disease. A surprising number of patients with undiagnosed gait difficulty, presenting to the department of Neurology, Dow Medical College and Civil Hospital Karachi, were eventually found to have osteomalacia. Most of the patients suffered unnecessary morbidity for an unacceptably long period of time and were not diagnosed.

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The purpose of this study is to outline the clinical, biochemical and radiological features observed in these indigenous cases of osteomalacia. Moreover, the inordinate delay in diagnosis, even by qualified medical professionals and the excellent response to simple treatment is spotlighted. This may help raise the level of awareness of the medical community to osteomalacia and help in its early diagnosis and prompt treatment.

## PATIENTS AND METHODS

From July 1993 to December 1999, 46 patients presenting with gait difficulty to the department of Neurology at Dow Medical College and Civil Hospital Karachi, were diagnosed to have osteomalacia.

The diagnostic criteria included a combination of :

- \* Symptoms: Gait difficulty with bone pain.
- \* Signs: An antalgic gait and bone tenderness .
- \* Biochemical features: Low or normal serum Calcium levels.  
Low or normal serum Phosphorus levels.  
Raised serum Alkaline phosphatase levels.
- \* Radiologic findings: Ground glass appearance of bone architecture  
Looser's zones ( pseudo fractures)

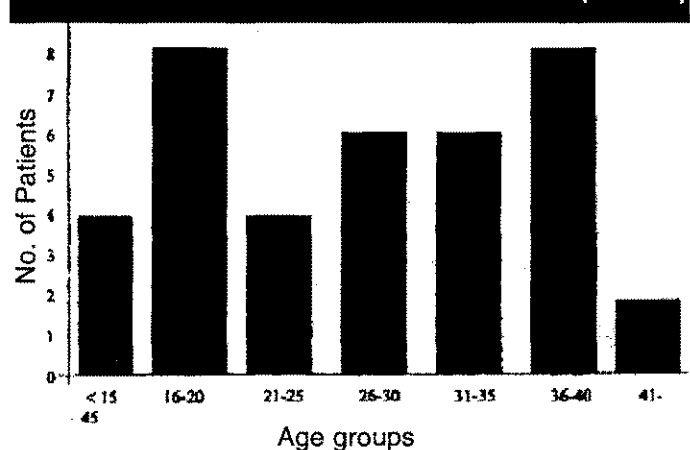
Patients presenting with similar symptoms, but with neurological signs, (except osteomalacia myopathy) were not included in this study. The diagnostic certainty with these non-invasive tests was considered adequate enough to justify initiation of treatment for osteomalacia. Due to logistic reasons bone biopsy, said to be the gold standard for the diagnosis of osteomalacia<sup>3</sup> was performed only in one patient. Similarly Vitamin D levels could not be done due to non availability of the test. An attempt was made to identify the underlying cause of osteomalacia in all the cases, by appropriate test.

The clinical, biochemical and radiologic features were analyzed. The status of previous doctors, time delay in diagnosis and the response to therapy was also studied.

## RESULTS.

Out of a total of 46 patients, 42 were females (91%) and 4 were males (9%). The age range of male patients was 13 to 19 years. The age distribution in female patients is shown in Table I.

**TABLE-I DISTRIBUTION (FEMALE)**



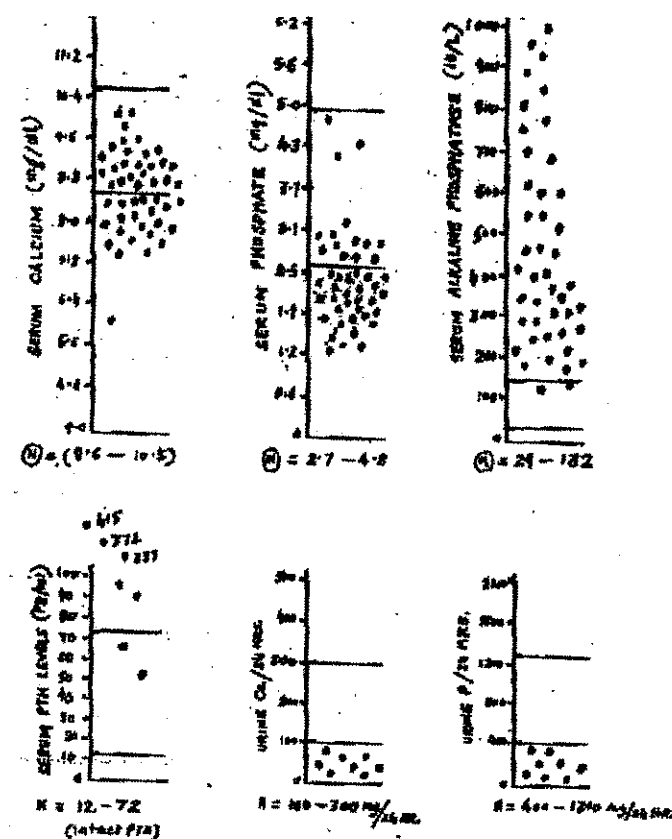
The salient clinical features included bone pain, low backache and gait difficulty. Signs included a characteristics gait because of pain in bones (antalgic gait) and bone tenderness (Table II).

Serum Calcium, Phosphate, Alkaline phosphatase levels

**TABLE-II CLINICAL FEATURES**

Symptoms	No. of Pts.	Signs	No. of Pts.
Bone pain / Low backache	46	Bone tenderness	46
Gait difficulty	46	Antalgic gait	46
Difficulty in rising from squat	37	Severe proximal weakness of pelvic girdle muscles	6
Pain in ribs	28	(osteomyopathy)	
Fits	2		
Carpopedal spasms	2		
Episodes of paralysis	2		

were estimated in all the 46 patients and are shown in Figure 1. Due to financial constraints serum parathormone levels and Urinary calcium and phosphorus levels could be done in only few patients.



**Fig. I Biochemical Features**

X-rays of painful bones revealed a ground glass appearance of bony architecture in 37 patients. Looser's zones (upper femur, pubic remi, ribs & scapula) in 16 and cord fish vertebrae in 8. Bone scans (Tc 99m) in 3 patients revealed pseudo fractures (Looser's zones) as foci of increased tracer uptake.

Search for underlying aetiological factors revealed a variety of causes and associations (Table III). In males

**TABLE-III UNDERLYING CAUSES**

Causes	No. of pts.
<b>Causes in females (n = 42)</b>	
Associated with pregnancy	1
Associated with Renal Tubular Acidosis	1
Associated with Neurofibromatosis	3
? Hypophosphataemic osteomalacia	2
Malabsorption (Crohn's disease)	1
Drug induced (Rifampicin, Phenobarbitone Phenytoin)	2
Deprivational Osteomalacia (low vit. D diet and low sunshine exposure)	10
Uncertain cause despite search	12
<b>Causes in females (n = 4)</b>	
Associated with Neurofibromatosis	3
Malabsorption (Crohn's disease)	1



the causes were different, being mostly drug induced and secondary to chronic renal failure.

An analysis of the duration of misdiagnosis revealed a

**TABLE-IV** APPROXIMATE DURATION OF COMPLAINTS  
TILL REFERRAL (i.e. undiagnosed period)

Duration	No. of pts.
4 years	11
3 years	8
2 years	18
1 years	7
<b>Previous treatment medical personnel status</b>	
General practitioners	31
Consultant Physicians	8
Orthopedic Surgeons	6
Neurologist	1

delay of several years (Table IV) even though the patients had been seen by qualified medical personnel.

The investigations that these patients had undergone before presentation to our Department included MRIs, EMG/NCVs, Serum Calcium, CPK and Muscle Biopsy. The previous diagnostic labels included functional/ depression, polymyositis, rheumatoid arthritis and mixed connective tissue disorder. The treatment that these patients had received included steroids in 6 cases and non-steroidal anti-inflammatory drugs in all the cases. Some had received calcium alone without Vitamin D and had no improvement.

All patients responded to Vitamin D or its analogues viz. Alphacalcidol or Calcitriol (Table V). The response was observed after an average of 6 to 8 weeks of therapy with diminution in pain and improvement in mobility. The great majority regained complete recovery and remained well on maintenance therapy.

**TABLE-V**

<b>Response to treatment</b>	
Responded to simple vit. D plus Calcium (Ostocalcium / Decalc) three to eight tablets per day.	22
With addition of alpha-calcidol to above (One-alpha Leo)	20
With Calcitriol (Rocaltrol)	04
<b>Outcome</b>	
Regained complete or near complete functional recovery.	40
Recovered partially with some residual deficits.	04
Expired *	02

\*01 associated with complications of renal tubular acidosis, 01 associated with severe hypocalcaemia and status epilepticus

## DISCUSSION

Osteomalacia has been studied in depth, mostly in western literature.<sup>4,5,6</sup> Many studies have been carried out in biopsy proven osteomalacia. A comparison of these studies with our study reveals differences in the age and sex distribution. In this study the great majority of the

patients were females with peaks in the second and fourth decades. The western studies have mostly lesser difference in sex and age distribution also extends into the elderly population. The clinical features of our patients are characteristic and match those described in most published papers. The value of history and physical examination is thus of paramount importance in making a diagnosis of osteomalacia.<sup>7</sup> The biochemical results especially serum calcium, phosphate and alkaline phosphatase level, are also in keeping with the usually described picture and appear to have good diagnostic value in osteomalacia.<sup>8</sup> Although bone biopsy was not done in most of the patients due to logistic reasons; non-invasive tests were deemed adequate for diagnostic purposes.<sup>9</sup> In our setting with financial constraints, these tests are probably enough to justify initiation of treatments for osteomalacia.

The female patients gave history of low Vitamin D diet and low sunshine exposure in 10 cases while in 12 female patients a cause could not be identified despite search. Interestingly these were the cases who required activated Vitamin D (Alfacalcidol or calcitriol) for a good response. The exact cause in these cases is a matter of speculation and needs further studies to clarify the issue. Perhaps a defect in activation of Vitamin D may underlie these cases.

Drug-induced osteomalacia was associated with anti-epileptic or anti-Koch's treatment. Although said to be rare in the East,<sup>9</sup> it is a well known cause of osteomalacia. Awareness of this side effect and Vitamin D supplementation may prevent this.

That osteomalacia is slow to be diagnosed in the West is known<sup>10</sup>, but the delay in correct diagnosis is inordinate and easily preventable if the possibility of osteomalacia is kept in consideration in patients with bone pains and difficulty in locomotion. This will avoid unnecessary morbidity and reduce the financial burden of useless investigations. The good results of simple therapy make it mandatory that early diagnosis and prompt treatment be the aim in patients with symptoms of osteomalacia.

A higher index of suspicion may shorten this delay in diagnosis of Osteomalacia, which requires only a few non-invasive investigations and simple treatment to alleviate the misery of patients.

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# PROKINETIC EFFECT OF ERYTHROMYCIN ON CONTRACTILITY OF AN ISOLATED STRIP OF RABBIT'S INTESTINE COMPARED WITH NEOSTIGMINE AND METOCLOPRAMIDE

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## ABSTRACT:

*Intestinal hypomotility is a major problem after surgery on gastrointestinal tract and in certain conditions. Prokinetic effect of erythromycin on ileal contractility on an isolated strip of rabbit's intestine was compared with that of neostigmine and metoclopramide. Effect of neostigmine is highly significant ( $P > 0.001$ ) in increasing contractility in intestinal muscle strips. Metoclopramide effectively increased contractility ( $P > 0.1$ ) and erythromycin also significantly ( $P > 0.05$ ) improved contractility. This study proved that erythromycin is a potent prokinetic agent, which can be useful in conditions associated with gastrointestinal hypomotility.*

**KEY WORDS:** *Prokinetic effect, Intestinal contractility*

## INTRODUCTION

Fourteen macrolides are known to produce alteration in digestive tract motor activity. These include the induction of strong gastric contractions and increase in the motility of small intestine. The commonly reported gastric intestinal side effects of erythromycin are related to its prokinetic action on the gut. This action is mediated partly by its motilin receptor stimulating activity. This action may be of clinical use in conditions associated with gastro intestinal hypomotility such as diabetic gastroparesis, intestinal pseudo obstruction, post-vagotomy gastroparesis and post-operative gastroparesis. Intestinal motility is a complex process requiring functioning intestinal smooth muscles, an intact enteric nervous system and appropriate modulation through intrinsic nerves and hormonal influences which develop both through fetal life and after birth<sup>1</sup>. Prokinetic agents may increase motility through one or more of these mechanisms.

The aim of this study was to compare the prokinetic effects of erythromycin with neostigmine and metoclopramide on small bowel motility of rabbit.

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## MATERIAL & METHODS:

Nine male healthy rabbits were included in the study. Rabbits were killed by cervical transection after overnight fasting. Intestine was removed after dissection and was placed in rabbit's ringer solution, care was taken to handle only the mesentery and not to traumatize the bowel wall. Three strips of 2 cm length were cut from each rabbit's bowel. Each segment of the bowel was suspended in a Harvard Student's organ bath containing rabbits ringer solution bubbled with 95% oxygen and 5% carbon dioxide and kept at 37°C. The bowel was attached to a horizontal lever to which a writing pen was attached. After initial 30 minutes equilibrium period, normal intestinal contractions were recorded for two minutes on Harvard Universal kymograph. Then one ml of 1:1000 solution of neostigmine was added into one of three strips of one rabbit and the effect was recorded for two minutes. Similarly effect of one ml of 1:1000 solution of metoclopramide and one ml of 1:1000 solution of erythromycin was seen and recorded on other two strips. Afterwards the same drug was repeated on the same strips after addition of 1 ml of 1:1000 solution of atropine. The same procedure was repeated on other eight rabbit's intestine.

## RESULTS

The effect of each prokinetic agent on contractility was compared with normal contraction without adding the drug. Responses are shown in Table I. Height of contractions with neostigmine varied from 18 mm to 80 mm (mean 54.7 mm) as compared to normal, which varied from 3 mm to 9 mm (mean 5 mm). Height of contractions with metoclopramide varied from 8 mm to 21 mm (mean 15.8 mm) and normal contractions' height varied from 3 mm to 16 mm (mean 11.1 mm). Height of contractions with erythromycin varied from 8 mm to 16 mm (mean 10.5 mm), while normal contractions were between 2 mm and 7 mm (mean 4.3 mm).

**TABLE-I EFFECT OF NEOSTIGMINE, METOCLOPRAMIDE AND ERYTHROMYCIN ON INTESTINAL CONTRACTILITY OF RABBITS**

No. of Experiment	Neostigmine		Metoclopramide		Erythromycin	
	Normal Contractions (mm)	Contractions after drug (mm)	Normal Contractions (mm)	Contractions after drug (mm)	Normal Contractions (mm)	Contractions after drug (mm)
1	3	80	12	16	4	16
2	9	60	10	18	2	8
3	4	80	16	19	3	9
4	5	60	10	17	5	11
5	4	55	5	8	7	16
6	3	18	3	8	4	11
7	4	55	13	19	5	12
8	6	35	15	21	5	10
9	7	50	16	19	4	12
Mean	5	54.7	11.1	15.8	4.3	10.5

(Results were analyzed statistically using a student 't' test comparing maximal response with and without each agent.) Typical tracings are shown in Figures 1, 2 and 3 with neostigmine, metoclopramide and erythromycin. Results are summarized in Figure 4. Effect of neostigmine is highly significant ( $P > 0.001$ ) in increasing contractility in intestinal muscle strips. Metoclopramide effectively increased contractility ( $P > 0.1$ ). Erythromycin significantly ( $P > 0.05$ ) improved contractility. Effects of neostigmine and metoclopramide were blocked with atropine but the effect of erythromycin was not blocked by atropine in this study as shown in Fig 3.

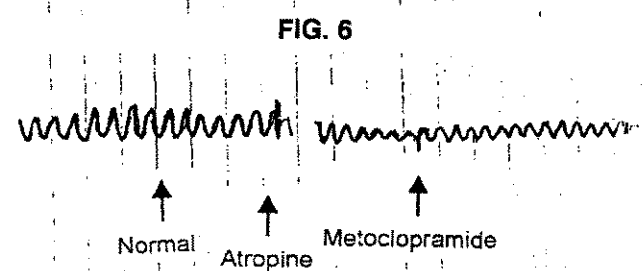
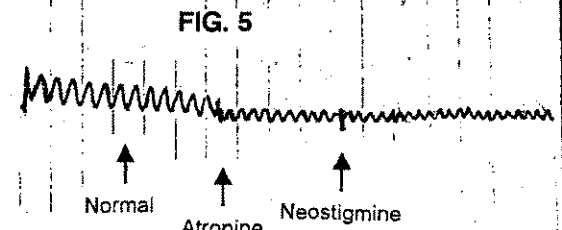
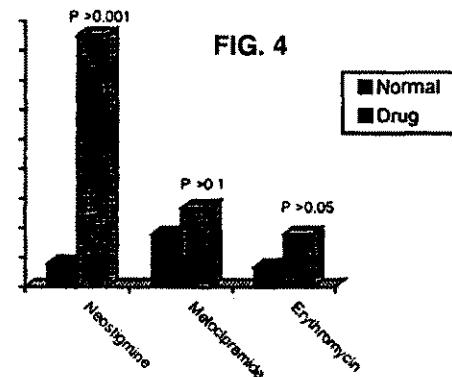
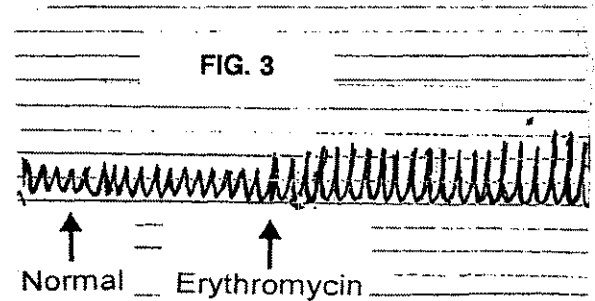
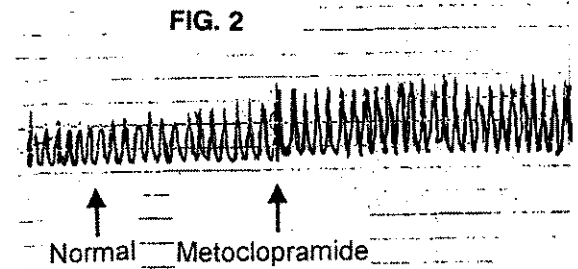
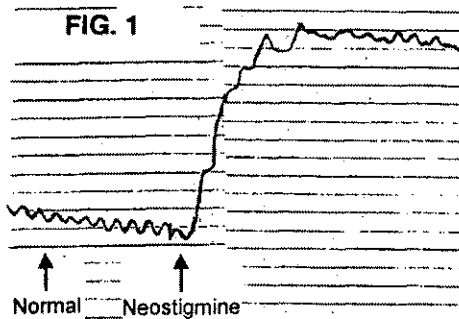
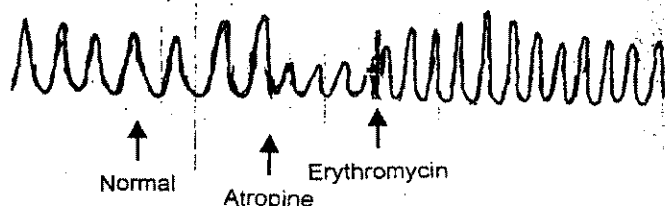


FIG. 7



## DISCUSSION

This study assessed the effect of three prokinetic agents on the intestinal contractility of rabbit. Metoclopramide is a dopamine antagonist acting at D<sub>2</sub> receptors. It increases intestinal smooth muscle tone through a number of mechanisms.<sup>2,3</sup> It is widely used for treatment of both gastro-esophageal reflux and as an anti-emetic but is associated with neurological side effects in significant number of cases. Neostigmine is a cholinesterase inhibitor and is a potent prokinetic agent producing an increase in secretory and motor activity of the gut. It is used for the treatment of post-operative ileus and congenital megacolon. This drug cannot be used for long term as in diabetic gastroparesis due to its cholinergic side effects. Erythromycin is a macrolide antibiotic that has recently been noted to increase the rate and strength of peristaltic contractions in the stomach, small bowel and colon.<sup>4</sup> This prokinetic effect is likely mediated through direct stimulation of motilin receptors.<sup>5</sup> Kaoch and associates concluded in their study that erythromycin is an effective prokinetic agent for diabetic gastroparesis. This improved esophageal transit and gastric emptying may improve glycaemic control.<sup>6</sup> Similarly, Pan Dy and his associates concluded that erythromycin is an effective prokinetic agent for diabetic gastroparesis.<sup>7</sup> Vanderhoo et al proved in their study that erythromycin may be a useful prokinetic agent in the treatment of cyclic vomiting in childhood.<sup>8</sup>

The study by Burt et al showed that intravenous erythromycin significantly improved gastric emptying in patient after esophago-gastrectomy by stimulating gastric motility.<sup>9</sup> Department of Medicine, University of Virginia's study concluded that intravenous erythromycin significantly improved the initial phase of solid meal gastric emptying in patients with chronic symptomatic post-antrectomy vagotomy gastroparesis.<sup>10</sup> An Italian study concluded that erythromycin may represent an effective therapeutic alternative to more established forms of treatment in patient's with diabetic gastroparesis especially when other drugs have failed.<sup>11</sup> A clinical trial in Italy

showed that hyperglycaemia attenuates erythro-mycin induced acceleration of solid phase gastric emptying in idiopathic and diabetic gastroparesis.<sup>12</sup>

## CONCLUSION

This study proved that erythromycin is a potent prokinetic agent. This drug can be used effectively in conditions associated with gastrointestinal hypomotility especially diabetic gastroparesis as most of the clinical studies proved its effectiveness in these patients.

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# CLINICAL PRESENTATION OF GUILLAIN-BARRE SYNDROME IN KARACHI

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## ABSTRACT:

To assess the clinical presentation of Guillain-Barre syndrome (GBS) in the local population, a hospital based cross sectional study was carried out in the Department of Neurology, Jinnah Postgraduate Medical Centre between the years 1995-1998. A total of 95 patients suffering from GBS who were admitted in the department, were studied. 50 were males (53%). The maximum number of cases belonged to the age group 20-29 years (n=25). All the 95 patients had reported motor system involvement with symmetrical involvement in 85 with respiratory involvement in 35.8%. Fifty nine cases had sensory symptoms and 29 had cranial nerve involvement. Autonomic disturbances were noted in 24.2% cases. CSF showed raised protein with paucity of cells. Demyelination was noted in 49 cases and axonopathy in 46 cases. Seven cases had fatal outcome. GBS is uncommonly seen but by no means is a rare disease. In the present series a fatal outcome was relatively less and in accordance to the literature. More cases with axonopathy were noted than reported previously.

**KEY WORDS:** Guillain barre syndrome, presentation

## INTRODUCTION

Guillain-Barre syndrome (GBS) is a disease of the peripheral nervous system. It is an acute polyneuropathy of variable severity which may be fulminating and fatal in some cases due to paralysis of respiratory muscles and/or the autonomic involvement. It has a global distribution, occurs in all seasons, can affect children and adults of all ages and both sexes. Although its yearly incidence is only 1-2/100,000, but due to fatalities, this disease has gained an important place in medical practice. The mode of presentation, the evaluation of disease and the eventual course have varied in various previous descriptions. We are presenting a hospital based data on GBS which was collected over a period of about three years. Clinical presentation, cerebrospinal fluid findings and electrophysiological observations are discussed.

## PATIENTS AND METHODS

The present study was carried out in the Department of Neurology, Jinnah Postgraduate Medical Centre

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(JPMC), Karachi from January 1995 to January 1998. Patients of all ages and both sexes were included. Socioeconomically patients belonged to upper middle to lower class. We received patients from both urban and rural areas of the province of Sind, some areas of Punjab and Baluchistan. Cases fulfilling the National Institute of Neurological and Communicative disorders and Stroke (NINCDS) established criteria (Asbury criteria) for the clinical diagnosis of GBS<sup>1</sup> were included in the study. Cerebrospinal fluid (CSF) examination was carried out in all the cases in the second week and onwards. The rise in the CSF protein with relative paucity of CSF cells was considered to be supportive of the diagnosis. Nerve conduction studies were also undertaken in all the cases. The criteria for demyelination and axonopathy was based on Kimura.<sup>2</sup> The motor nerves included Median, Ulnar, Radial, Tibial and Peroneal. The sensory nerves included Median, Radial and Sural.

Initially 130 cases were recruited. Eighty five were clinically definite GBS. Ten presented with initial asymmetry but in them other differential diagnoses were excluded by investigations. Thirty five cases were

excluded from the study because they were not completely fulfilling the Asbury clinical criteria or could not be properly investigated for the other differential diagnoses. Thus 95 cases were studied who fulfilled the criteria.

## RESULTS:

Results are given in the following tables:

**TABLE-I AGE AND SEX DISTRIBUTION**

Age Group (Years)	Male (n=50)	Female (n=45)	Total (n=95)
< 10	1 (2.0 %)	-	1 (1.1 %)
10 - 19	10 (20.0 %)	8 (17.8 %)	18 (18.9 %)
20 - 29	14 (28.0 %)	11 (24.4 %)	25 (26.3 %)
30 - 39	6 (12.0 %)	4 (8.9 %)	10 (10.5 %)
40 - 49	7 (14.0 %)	8 (17.8 %)	15 (15.8 %)
50 - 59	10 (20.0 %)	9 (20.0 %)	19 (20.0 %)
> 60	2 (4.0 %)	5 (11.1 %)	7 (7.4 %)
<b>Total</b>	<b>50</b>	<b>45</b>	<b>95</b>

**TABLE-II SYMPTOMATOLOGY**

Symptom	Male	Female	Overall
Motor limbs weakness	50 (100%)	45 (100%)	95 (100%)
Sensory (Numbness, pain)	29 (58.0%)	30 (66.6%)	59 (62.1%)
Cranial N involvement	18 (36.0%)	11 (24.4%)	29 (30.6%)
Autonomic involvement (other than U.bladder)	11 (22.0%)	12 (26.7%)	23 (24.2%)
U. bladder involvement (temp)	12 (24.0%)	11 (24.4%)	23 (24.2%)
Respiratory paralysis	13 (26.0%)	11 (24.4%)	24 (25.3%)

**TABLE-III PATIENT WITH RESPIRATORY INVOLVEMENTS**

Respiratory Status	Male	Female	Overall
Breathing Difficulty but not respiratory failure	6 (12.0%)	4 (8.9%)	10 (10.5%)
Breathing difficulty with respiratory failure	13 (26.0%)	11 (24.4%)	24 (25.3%)
Patient put on ventilator	12 (24.0%)	8 (17.8%)	20 (21.1%)
Patient came off successfully from ventilator	11 (22.0%)	7 (15.6%)	18 (19.0%)

Out of 95 cases 59 cases (62.1%) had sensory involvement. Paraesthesias (n=59), mixed type (n=59) and pain (n=58) were the commonest sensory symptoms. Deep sensory involvement (including position sense and vibration) was less common (n=18) (Table-IV).

**TABLE-IV TYPE OF SENSORY INVOLVEMENT**

Type of Sensation	Male	Female	Total
Paresthesia	29 (58.0%)	30 (66.7%)	59 (62.0%)
Mixed type	29 (58.0%)	30 (66.7%)	59 (62.0%)
Pain	28 (56.0%)	30 (66.7%)	58 (61.0%)
Deep sensory	10 (20.0%)	8 (17.8%)	18 (18.9%)
Cortical Sensory			
Loss Sensory signs	30 (60.0%)	30 (66.7%)	60 (63.2%)

**TABLE-V DISTRIBUTION PATTERN OF SENSORY INVOLVEMENT**

Distribution Pattern	Male	Female	Overall
Glove & Stocking	29 (58.0%)	30 (66.7%)	59 (62.1%)
A typical distribution	20 (40.0%)	25 (55.6%)	45 (47.4%)
SP. Segment level (ascending with changing pattern)	12 (24.0%)	8 (17.8%)	20 (21.1%)
Radicular distribution	2 (4.0%)	2 (4.4%)	4 (4.2%)
Sensory N Territory	3 (6.0%)	2 (4.4%)	4 (4.2%)

**TABLE-VI C S F ABNORMALITIES %OF PATIENTS**

<b>C S F Protein concentration</b>	
a Elevated after 1st week	90 %
b Elevated during initial four weeks	100 %
<b>C S F cell count (white cell)</b>	
10 - 20	45 %
20 - 30	25 %
30 - 40	15 %
40 - 50	3 %
50 - 100	2 %

**TABLE-VII NERVE CONDUCTION STUDIES**

Distribution Pattern	Male	Female	Overall
Demyelinating	26 (52.0%)	23 (51.1%)	49 (51.6%)
Axonal	24 (48.0%)	22 (48.9%)	46 (48.4%)

The hospital stay of the patients ranged from 4-6 weeks. At the time of discharge a favourable outcome (sign of recovery) in 88 cases (92.6%) and fatal outcome were noted in 7 cases (7.4%). Out of fatal outcome, 4 cases had respiratory failure and could not get respiratory support, 2 cases had respiratory failure despite respiratory support and 1 case had autonomic disturbances.

## DISCUSSION:

In our study, 95 cases of clinically definite GBS, as per Asbury's clinical criteria<sup>1</sup> were recorded. Of these 95 patients 50 were males and 45 were females (M:F=1:0.9). This male preponderance is reported in majority of the studies.<sup>2</sup> Peak occurrence was noticed between the age 20-29 years and 50-59 years which is in accordance with previous studies.<sup>3</sup> The negligible number of cases found in the first age group (0-9 years) may be due to the presence of a specialized paediatric hospital near the study setting. All the 95 cases were sporadic in nature. Although rarely some familial incidence has been described in literature,<sup>4</sup> none was found in our study. A definite increase in the number of cases was observed in the months of January, February and September, similar to the our study. Studies from Jordan in 1976<sup>5</sup> have mentioned increased occurrence of GBS associated with an outbreak of diarrhoea. Outbreaks of gastroenteritis has been noticed in our study area during the summer season (based on local medical newspaper) but this was not

associated with increase in the number of GBS cases.

An antecedent illness was noted in less than half of the cases (42.1%) contrary to the two-thirds of the GBS cases in the literature. Respiratory tract infection was the commonest antecedent illness in our study in 15 cases (15.8%) as is reported in literature.<sup>6</sup> The frequency of occurrence of various types of antecedent illnesses observed in our series were relatively in accordance with the other studies, the only exception being isolated fever in 11 (11.6%) patients; being the second most common antecedent illness in our series. We can attribute this to self medication (common in the local population) which may modify the presentation of the antecedent illness.

In cases with strong suspicion of some viral or bacterial illness, serological profile and culture tests were also performed. Four out of eight cases with gastrointestinal infections (5% of all GBS cases) turned out to be positive for campylobacter jejuni. In literature almost 20% of GBS cases followed C. jejuni infection.<sup>7,8</sup> In one case antibodies for hepatitis-A were positive and another followed anti-rabies vaccine similar to the findings in the literature.<sup>9,10</sup> One case occurred in a miliary pulmonary tuberculosis patient on anti-tuberculous therapy (rifampicin, isoniazid, pyrazinamide and ethambutol) who recovered from GBS. No such correlation has been mentioned in literature. One case post cholecystectomy, constituted 1% of the patients. In literature 5-10% post-surgery GBS onset has been mentioned.<sup>12,12</sup> Two cases were associated with pregnancy one in the second trimester and the other in parpeurium. Association of pregnancy and auto-immune neuromuscular disease has been observed by Parry 1988.

All the cases included in our study had progressive motor limb weakness of acute onset. No case of pure acute cranial motor nerve involvement, pure sensory or of Miller Fisher variant were noted; though we had three cases with ocular involvement. Both ocular involvement and Miller Fisher variant are reported in 5% of cases. Miller in 1956 himself reported three cases.<sup>13</sup>

The pattern of motor weakness in majority of our subjects was symmetrical (n=85; 89.5%) and only 10 subjects (10.5%) presented with asymmetrical weakness. This is in accordance with the series reported by Loffel 1977<sup>14</sup> and Winer 1988.<sup>15</sup>

In majority of the cases initial weakness started distally and then it ascended to involve the proximal muscles. Lower limbs were first involved. In majority of our cases weakness evolution pattern was ascending (n=73; 76.8%). Haymaker<sup>16</sup> and Asbury<sup>1</sup> had similar observations.

In 8 (8.4%) cases in our series, initial weakness was noted in the facial distribution which later progressed and

continued in the limbs. Moreover in these cases the pattern of limb weakness was undetermined and was generalized from onset. The onset and progression of illness in these cases was rapid and severely disabling. This was also noted by Ropper<sup>18</sup> and earlier on by Haymaker.<sup>16</sup>

In most of our cases the weakness was rapidly progressive from the onset of illness. More than 50% cases became bedridden within 3-4 days and maximum weakness (nadir) in these cases reached within 10 days. Those with slower onset had longer progression and took a maximum of three weeks to reach their nadir. Severity of weakness in the latter was also lesser than those with rapid progression. In very few cases weakness progressed upto 4 weeks. According to Hughes 1994<sup>17</sup> acute demyelinating polyneuropathy reaches its nadir within 4 weeks. This observation is supported by Haymaker who reported 50 fatal cases with similar pattern.

Patients with respiratory muscle involvements were noted in 34 (35.8%) cases. 24 (25.3%) cases had breathing difficulty with respiratory failure. Landry in 1859 mentioned an ascending paralysis with respiratory failure; also reported by others.

Among the weakness seen in the distribution of cranial nerves facial weakness is the commonest observation in our study and 29 (30.5%) cases presented with bilateral facial weakness. According to other studies facial diplegia can be found in 30-50% of cases. Other cranial innervated muscle involvement leading to dysphagia, dysarthria and diplopia were noted in 6 cases (6.4%), which is in accordance with the other studies. Generalized areflexia was noted in 78 cases and partial areflexia was noticed in rest of the 17 cases. Absent ankle jerks were noted in all cases (n=95; 100%). This observation is strongly supported by Asbury<sup>1</sup> and Ropper<sup>18</sup>.

Sensory symptoms and signs were a feature noted in 59 patients (62.1) in our study. Mixed type pattern and paraesthesiae were the commonest, being found in 59 cases (62%) followed by pain in 58 cases (61%). Deep sensory loss was noted in 18 cases (18.9%). Glove and stocking type was the commonest distribution (n=59; 62%) followed by atypical distribution (n=45; 47.4%), spinal segmental with ascending pattern (n=20; 21.1%) and radicular distribution (n=4; 4.2%). Sensory abnormalities are demonstrated by Roppers<sup>18</sup> in three fourth of his cases. Studies by Haymaker<sup>16</sup>, Asbury<sup>1</sup> also favour our findings.

The Autonomic involvements was found in 24.2% of cases, temporary retention of urine was the commonest in 23 (24.2%) cases followed by Sinus tachycardia / bradycardia in 21(22.1%) loss or profuse sweating in 17



(17.9%) cases and fluctuating Blood pressure in 13 (13.7%) cases. Similar presentations are reported in the literature.<sup>19,20</sup>

Elevated CSF protein concentration after first week was found in 90% of cases and in 100% during the initial four weeks. We found only 5 cases with elevated CSF protein concentration having cell count more than 40. Earliest description of albuminocytologic dissociation was made by Gullian-Barre 1916-1936 with elevated CSF protein and few cells and this observation has been described by many researchers.<sup>1,13,14,18</sup>

Nerve conduction studies were performed between day 10 and 4 weeks after the onset of illness. A demyelinating type of Neuropathy was found in 49 cases (51.6%) and axonopathy in 46 cases (48.4%). These findings are not in accordance with most of the studies conducted earlier, because in majority of studies GBS is of demyelinating type. But there have been several recent reports of GBS which indicate that the primary abnormality is axonal degeneration rather than demyelination. Cases of axonal degeneration are reported from Argentina, Guy's Hospital London, Tokyo, Canada and Paris.

GBS is uncommonly seen but by no means a rare disease. In the present series fatal outcome was relatively less and in accordance with the literature. More cases with axonopathy were noted than previously reported.

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# GEOGRAPHICAL/BIOCHEMICAL DIVERSITY OF FEMALE BREAST CANCER AMONG DEVELOPING AND DEVELOPED COUNTRIES

RUKHSANA KHURSHID, SHAHEEN RASHEED, NASIM AKHTER, ASMA MALIK

## ABSTRACT:

A Prospective observational study was carried at Fatima Jinnah Medical College, Lahore on 100 female patients with histologically verified breast cancer and 50 age and sex matched control subjects with no history of breast cancer. The objective was to ascertain geographical/biochemical diversity of findings breast cancer among developed and developing countries. Physical findings as well as biochemical findings in serum of both patients and control subjects was carried out by standard automated calorimetric method. Variations in both physical findings and biochemical parameters was observed and compared with control subjects and with studies of different developed countries. It was concluded that seventy five percent of breast cancer in Pakistani women occurred with no recognized major risk factor. Further research is needed in the population of different city of Pakistan to find out the actual risk factor responsible for the disease.

**KEY WORDS:** Physiological Variation, Biochemical marker, Breast Cancer, Metastasis,

## INTRODUCTION

Worldwide variation in the pattern and incidence of breast cancer is a well established phenomenon that offers insight into the causes of the disease. The incidence of breast cancer varies from area of low incidence e.g. Japan (8.9/1000) and other Asian, Latin America and African countries to area of high incidence such as North America and Western Europe.<sup>1</sup>

Incidence and mortality rate of breast cancer in Pakistan are not accurately available but studies based on multi-center data reported that breast cancer was most common among females.<sup>2</sup> Various explanations have been considered for differences in breast cancer risk factors among population including genetic, menstrual, reproduction, menopause with parity and age at first birth.<sup>3</sup> The results derived from these risk factors have a remarkable role in the progress of medicine. Over recent years, biochemical analysis of serum obtained from patients of breast cancer have been useful to assess the metabolic activity within the mammary gland as well as to better understand the natural history of breast cancer. Decrease in certain biochemical parameters would still be compatible with increased cellular activity.<sup>4</sup>

The study was conducted to clarify the genetic, hormonal and/or other bases for breast cancer's link with menstrual and menopausal related events and may help to elucidate whether age or age related factors have a significant role in women's chance of developing breast cancer. Some biochemical parameters related to cellular events of tumor and presence of distant metastasis related information is collected and discussed.

## PATIENTS AND METHODS

Hundred patients with histologically proven breast cancer neoplastic disease and fifty age and sex matched controls with no history of breast cancer or with any disease participated in the investigation. The patients were selected from those admitted in cancer ward or those attending out-patients Department of Radiotherapy, Fatima Jinnah Medical College, Lahore.

Blood samples were taken in fasting state. The serum were kept at -20°C until use. Hemoglobin, platelets and serum GPT, alkaline phosphatase, total bilirubin, total protein, albumin, globulin, AG ratio, uric acid, triglyceride, cholesterol, sugar, calcium, blood urea nitrogen (BUN) and serum creatinin were determined by standard automated method using autoanalyser (Hitachi 705, 1986). Immunoglobulin G (IgG) was analyzed by using Wolfson's

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reagent and Cathepsin DS and L were analyzed using hemoglobin and azocasein as substrate. Scores of estrogen (ES) receptor were determined immunocytochemically using antibodies. Score <75 was taken as estrogen receptor negative.

On statistical analysis, significant control test (t-test) of the difference between average values was used. P values <0.01 were taken as significant difference.

**Table-I Physical parameters in patients with breast cancer**  
No. of cases are in parenthesis

Mean age (years)	46.8±13.5	
Mean age at first pregnancy	Nulliparous	(15)
	2-4 children	(45)
Breast feeding		(40)
Mean age at Menarche		(80)
Mean age at Menopause		14±2.13 yrs.
Menopausal status		44±4.15 yrs.
Histologically diagnosed	Premenopausal	(53)
	Intraductal carcinoma	(70)
	Invasive lobular carcinoma	(04)
	Invasive ductal carcinoma	(21)
Duration of cancer	4.60±2.4 months	(72)
	2.75±3.1 years	(25)
	9.00±5.5 days	(03)
Estrogen receptor (ER)	ER positive	(70)
Status	ER negative	(30)
Metastasis	Lymph node	(72)
	Bone	(02)
	Liver	(01)
	No metastasis	(12)

**TABLE-II BIOCHEMICAL PARAMETERS IN BREAST CANCER PATIENTS AND CONTROL SUBJECTS**  
(No. of cases in parenthesis)

Parameters	Patients (n = 100)	Control Subjects (n = 50)	P-value
Hemoglobin (gm/dl)	12.56 ± 0.12	12.38 ± 0.42	N.S.
Platelets count (/cm)	333.96±16.79	333.96±16.79	P<0.001
ImmunoglobulinG (g/l)	23.93±1.60	26.30±1.67	N.S.
Cathepsin S (units)	7.09±0.22	5.62±0.48	P<0.001
Cathepsin D (units)	5.2±0.37	2.90±0.21	P<0.001
Glutamate Pyrovate transaminase	28.66±2.44	26.30±1.52	N.S.
Alkaline Phosphatase (u/l)	128±10.64	157.90±5.46	P<0.001
Total bilirubin (mg/dl)	0.44±0.03	0.55±0.04	N.S.
Total protein (gm/dl)	6.62±0.10	6.62±0.10	N.S.
Albumin (gm/dl)	3.57±0.08	4.48±0.11	N.S.
Globulin (gm/dl)	2.84±0.07	2.97±0.08	N.S.
A.G. ratio	1.52±0.07	1.43±0.06	N.S.
Uric Acid (mg/dl)	2.99±0.11	4.66±0.26	P<0.01
Triglyceride (mg/dl)	207.09±6.91	134.20±5.88	P<0.001
Cholesterol (mg/dl)	168.57±4.51	186.60±4.66	P<0.01
Blood sugar (mg/dl)	79.20±7.62	92.50±2.63	N.S.
Calcium (mg/dl)	5.28±0.18	8.24±0.12	P<0.001
Blood urea nitrogen (mg/dl)	25.07±1.68	26.38±1.09	N.S.
Creatinine	0.92±0.02	0.84±0.02	N.S.

P<0.001 = Highly Significant difference

P<0.01 = Significant difference

N.S. = No Significant difference

## RESULTS

Table I and Table II show the results of the physical examination and investigations:

## DISCUSSION

**Age:** Present study observed that maximum risk of breast cancer is in the age group of 35-40 years (mean age 40 years) and a decreased risk in either early age (25-30 years) or at menopausal status.<sup>5</sup> A protective hormonal effect against breast cancer relates with increasing age.

**Marital Status/Age at First Pregnancy:** All patients were married except one. The study was in accord with the studies carried out in western and eastern countries. Besides difference in the level of breast cancer risk in areas of the world striking differences occur in age at first pregnancy incidence pattern. International studies demonstrated that the age at which a woman had her first child was a major factor for increased risk of breast cancer. It was noted that if a full term birth occurred after the age of 30 there was a two fold increased risk of breast cancer. In this study we observed that mean age at first pregnancy of the majority was 22.6 years.

**Parity/Breast Fed:** According to this study, fifteen women were multiparous, 45 had 2-4 and 40 women had 6-8 children while nearly all were breast-fed. In developed countries the trend of breast feeding is not as much as in developing countries.<sup>6</sup> Present study is not in agreement with the study of a group of workers that women who are infertile, lack the much higher oestradiol sites and have significantly higher rate of cancer whereas multipara women have satisfactorily lesser chance to develop breast cancer. It was suggested that decreasing breast cancer with parity may be related to a long lasting decrease of prolactin after giving birth.

**Age at Menarche/Menopause:** In this study mean age at menarche was 14 years and at menopause it was 44 years. It had been suggested that the age at menarche may explain the difference in the incidence of disease between developed and developing countries. Thus, at one extreme a foreign girl will start menstruating until the age of 14-16 years<sup>7</sup> In the menopausal breast, the grade of tubular development of the lobule was related to the hormonal status and such lobular change might be useful as an index of response of a cancer of breast.

**Menopausal Status (Pre/Post Menopause):** Besides the number of risk factors, menstrual history strongly correlates with risk of developing breast cancer. In this study 53 women with breast cancer were at pre-menopausal stage and remaining at postmenopausal stage.<sup>8</sup>

**Type and Duration of Cancer:** According to this study 75% breast cancer were intra- ductal carcinoma, while 21% of invasive ductal carcinoma and 4% were the lobular type.

It was reported that in developed countries the most common breast cancer is invasive ductal carcinoma.<sup>9</sup> It is thought that intra ductal carcinoma is the progenitor of invasive carcinoma and has good prognosis compared to invasive carcinoma.<sup>10</sup> Present study showed that duration of cancer in 75 patients is 4-5 months while in 25 patients it was 2-3 years. The reason for this may be that it is easy to detect any mode in the breast. Breast cancer in developed countries diagnosed early than in the developing countries. These observations may be related to greater diagnostic skill (such as mammography etc) in the former.

**Estrogen Receptor Status:** Seventy patients have positive estrogen receptor whereas 30 patients with estrogen receptor negative. It was reported<sup>11</sup> that a positive estrogen receptor has proved to be an excellent predictor of a slower growing cancer with better prognosis. Different mechanisms influenced the role of estrogen receptor in mammary cancer. Several parameters such as PS, ERD, HSP and Cathepsin D that play an important role in breast cancer and metastasis have been reported to be synthesized under estrogen control.<sup>12</sup>

**Metastasis:** Over metastasis occurs by infiltration to skin and opposite breast by lymphatic to regional lymph mode and blood stream to bone, lung, liver and brain. In developed countries bone secondary are present in over half of the patients with disseminated disease while the second well known metastasis of breast is of nodal sites.<sup>13</sup> According to present study in 72 patients the lymphatic drainage of the breast is well known and nodal sites of metastasis are well established while two patients with bone metastasis and only one with liver metastasis. Twelve patients showed no metastasis.

## BIOCHEMICAL FINDINGS

**Hemoglobin:** In present study no significant difference was observed in the hemoglobin level of patients (12.56 gm/d) when compared to control subjects (12.83 gm/d). In western countries, however, the late development of anemia in Neoplastic State is a common part of the clinical pattern.

**Platelet Count:** According to this study platelet count (333.96/cm) was increased in patients in comparison to that of the control subjects (253.2/cm) and showed a highly significant difference ( $P < 0.001$ ).<sup>15</sup> A study of the USA stated that homeostatic mechanisms are significantly altered in malignant patients. About 50% of all patients and 95% of those with metastatic disease showed abnormality of homeostatic parameters such as abnormal activation of coagulation pathway, platelet aggregation and activation etc. Another study suggested that metastasis is related to the presence of platelets either at the site of cell localization or at the surface of tumor cells.

**Immunoglobulin (IgG):** Levels of IgG were decreased (23.93g/l) in patients as compared with that of control subjects (26.3 g/l) but showed no significant difference. Many studies suggest a relationship between immune response and tumor. It was proposed that the immune system play an important role in delaying the growth but causing regression of established tumor.<sup>14</sup> A variety of evidence was adducted to support these ideas occur more frequently in the neonatal period and in old age, when the immune system function less effectively. When reference value of IgG exceeded the possibility of chronic disease such as inflammation, autoimmune disease or neoplasm should be considered.

**Protease activity (Cathepsin S.L.D.):** Activity of cathepsin S.L. and D were increased (7.09, 6.06 and 5.2 units) in patients in comparison to control subjects (5.62, 2.52 and 2.9 units) A highly significant difference ( $P < 0.001$ ) was only observed in Cathepsin L and D and a significant difference ( $P < 0.01$ ) in Cathepsin S. Protease have been implicated in a number of pathophysiologic processes including cell proliferation bone resorption, arthritis, tumor growth and/or metastasis.<sup>16</sup> Elevated levels of protease are present in solid tumor of breast, ovary, prostate, lung etc. These protease not only degrade tissue components of the extra cellular matrix but also activate proenzymes and thus help to support tumor cell invasion and metastasis whereas some reported data is in contradiction.

**Liver function Test:** Although the levels of serum bilirubin, alkaline, Phosphatase (A.P.), total protein, albumin, globulin, A.G. ratio (0.44 mg/dl, 128.62 u/l, 6.62 gm/dl, 3.57 gm/dl and 1.52:1) were decreased except GPT (28.66 u/l when compared with the parameters of the control subjects (serum bilirubin=0.65 mg/dl, GPT=26.3 u/l, A.P.=6.62 gm/dl, serum protein =7.18 gm/dl, Albumin=4.48 gm/dl and globulin=2.97 gm/dl and A.G. ratio=1.43:1). No significant difference was observed. In both developed and developing countries the metastasis of breast cancer to liver is rare. In case of liver metastasis malignant lesion may be focal or they may diffusely infiltrate to the liver. In such cases serum bilirubin increase minimally. AP and GPT are however markedly elevated whereas albumin and protein is decreased and there is an increase in branched chain amino acids.

**Uric Acid:** Levels of serum uric acid was decreased (2.99 mg/dl) in patients when compared with the level of uric acid (4.46 mg/dl) in control subjects. This shows a significant difference ( $P < 0.01$ ).

**Lipid parameters:** Level of triglyceride (207.9 mg/dl) was higher in patients as compared to that of the control subjects (134.2 mg/dl) and showed a highly significant difference ( $P < 0.001$ ) whereas the level of serum cholesterol in patients was decreased (168.57 mg/dl) as compared to that of the controls (180.57 mg/dl) and the

difference was significant ( $P < 0.01$ ). This study is in accord with some international studies.<sup>17</sup> Alteration of lipid parameter related to the Oxidant-antioxidant State in cancer patients. This alteration to be associated with tumor growth and progression in patients with various sites of cancer including breast cancer.

**Blood Sugar:** Levels of blood sugar (79.2 mg/dl) in cancer patients was lower than that of control subjects (92.5 mg/dl) but showed no significant difference.<sup>18</sup> Breast cancer patients have an increased glucose uptake and utilization and expressed the facilitative glucose transporter Glut. Many of the enzymes involved in glycolysis are attached to the plasma membrane interior through specific receptor sites which exhibit a high rate of aerobic glycolysis by human cells.

**Renal profile (BUN Creatinine):** Levels of BUN and creatinine were changed. In patients BUN was 25.07 mg/dl and 26.38. Subjects (26.3 g/l) but shows no significant difference ( $P < 0.001$ ). Serum creatinine level in patients was 0.98 mg/dl and in control subjects it was 0.84 mg/dl, but this shows no significant difference. In most cases biochemical parameters are related to the metastatic site. In breast cancer, no metastasis towards the kidneys was observed.<sup>19</sup>

**Serum Calcium:** Serum calcium level was decreased (5.28 mg/dl) in cancer patients. The level for control subjects was (8.24 mg/dl). This shows a highly significant difference ( $P < 0.001$ ). Low calcium level increases the proliferation and life span of various epithelial cells including neoplastic mammary cells whereas the Endocrine society in its 33rd Annual Programme reported that hyperglycemia is commonly observed in patients with cancer. It was hypothesized<sup>20</sup> that parathyroid hormone prostaglandin and osteoclast activating factor have been implicated as causes of hypercalcemia.

Seventy five percent of the breast cancer occurs in Pakistani women with no recognized major risk factor. Both physical and biochemical findings of this study on Pakistani women shows a wide variation from developed countries. It is suggested that risk of developing breast cancer is the result of a complex, interplay of genetic, matagenic, endocrinologic and dietary factors. Present study was carried out only on a limited number of patients in one city of Pakistan. Hence further research is needed on the population of different cities of Pakistan to find the actual risk factor responsible of disease.

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# TYPHOID ENTERIC PERFORATION

AFZAL KHAN, CHANGEZ HAKEEM KHAN

## ABSTRACT:

*AA retrospective study of 76 patients with typhoid enteric perforation with a view to analyze the factors contributing to the high incidence of this condition and delayed diagnosis is presented. There were 50 male and 26 female patients. Most of patients (n = 28) were in the second decade of life. Common presenting symptoms were fever followed by pain abdomen. Widal test was positive in 71 patients while free gas under the diaphragm was found in 45 cases only. At laparotomy 74 patients were found to have ileal perforation and jejunal perforation in 2 cases. Faecal peritonitis was observed in 54 cases. In 59 patients primary closure of perforation was performed, while in 11 patients exteriorization of perforation as temporary ileostomy was done. Twelve out of 59 patients with primary closure of the perforation re-perforated with considerable postoperative morbidity and mortality. On the other hand 11 patients with the primary exteriorization of perforation as temporary ileostomy did very well.*

*The overall mortality rate was 17 out of 76 patients (22.35%). Early diagnosis and primary exteriorization of the perforation as temporary ileostomy can decrease morbidity and mortality considerably.*

**KEY WORDS:** *Typhoid enteric perforation.*

## INTRODUCTION

In spite of worldwide improvement in public awareness of hygiene and good sanitation, there are still some parts of the world such as Ghana, Egypt, Nigeria, India and Pakistan, where cases of typhoid enteric perforation are rising.<sup>1</sup> Typhoid enteric perforation is a cause of increased morbidity and mortality on the one hand and on the other hand it is becoming a common problem for the surgeons. Gemni-L- et al<sup>2</sup> reported typhoid enteric perforation in 3.3% of his 120 cases of typhoid fever in 1989. To treat typhoid enteric perforation, various surgical procedures are available depending on the general condition of patients at the time of admission and the findings at laparotomy. Until recently the standard approach was primary closure of the perforation regardless of the prevailing conditions such as presence of peritonitis at laparotomy. In this article we report our experience of this condition at Peshawar.

## PATIENTS AND METHODS

A retrospective study of 76 patients of typhoid enteric perforation was carried out from Jan 1991 to Dec 1994. All the patients were admitted either through casualty department as emergency or were referred as diagnosed cases of typhoid enteric perforation. A standard proforma obtaining information about age and sex of the patient, catchment area, duration of symptoms before operation, presenting symptoms, laparotomy findings, surgical procedure, postoperative complications and hospital stay was prepared and physical examination, investigations including Haemoglobin, White Cell Count, Widal test and x-ray plain abdomen (erect & supine) were recorded in all the cases. Laparotomy was also performed. Operative procedures included primary closure of perforation, resection of perforations with end to end anastomoses and exteriorization of the perforation as temporary ileostomy. Chemotherapy included either triple regimen (metronidazole, amoxycilline and gentamicin) or one of the quinolones.

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**RESULTS**

Ages of the patients ranged from 5 to 60 years with the highest incidence of in the second decade of life. Table I.

**TABLE-I AGE WISE DISTRIBUTION**

Age	No of Patients	%
5-10	13	17.5
11-20	28	36.84
21-30	14	18.42
31-40	12	15.79
41-50	4	5.25
51-60	5	6.58

Male to female ratio was 2:1, (50 males and 26 females). Catchment areas included almost all parts of NWFP and Afghan refugees with the highest incidence in Jamrud / Landikotal (Khyber Agency) 17 patients (22.35%) Table II. This high incidence in tribal area once again pointed to the low literacy rate and poor hygienic conditions in the area besides, poor means of communications.

**TABLE-II AREA WISE DISTRIBUTION**

Catchment areas	No of Patients	%
Nowshera	3	3.94
Swat/Dir	5	6.57
Waziristan	5	6.57
Mardan/Charsadda	6	7.89
Afghanistan	9	11.84
Peshawar	15	19.73
Banu /Kohat	16	21.05
Jamrud / L. Kotal	17	22.36

Patients presented with variable symptoms of which fever and pain abdomen were leading. (Table-III).

**TABLE-III SYMPTOMS**

Symptoms	No of Patients	%
Fever	76	100
Pain abdomen	58	76.31
Vomiting	47	61.84
Diarrhoea	26	34.21
Bleeding PR	8	10.52

General physical examination showed that majority of the patients were toxic, pale and dehydrated with coated tongues. Abdominal examination revealed various degrees of distention, tenderness, rigidity and ileus (Table IV).

**TABLE-IV SIGNS**

Sign	No of Patients	%
Abdominal distention	39	51.31
Rigidity	56	73.68
Tenderness	58	76.31
Ileus	22	29

Investigations showed positive Widal test in 71 patients (Table V). Negative widal test or the absence of gas under diaphragm does not rule out perforation.

**TABLE-V INVESTIGATION**

Investigation	No of Patients	%
Hb>9 gm/dl	29	38.15
Leukopenia	19	25
Uraemia	4	5.26
Widal +ve	71	93.42
Gas under diaph +ve	45	59.21

Out of 76 patients 66 were operated in emergency within 12 hours of their arrival. Ten patients were put on the next available operation list within 24 hours as this group needed preoperative correction of fluid, electrolytes and Hb. Laparotomy findings are shown in Table VI.

**TABLE-VI LAPAROTOMY FINDINGS**

Findings	No of Patients	%
Faecal peritonitis	54	71.05
Purulent peritonitis	17	22.36
Inter-loop abscesses	4	5.26
Pelvic abscess	1	1.31

Fifty-nine patients showed single perforation. Sixteen patients had 2-3 perforations while one patient had more than 3 perforations. The site of perforation was ileum in 74 patients and jejunum in two patients. All patients received peritoneal lavage with saline and suction. The determining factors for choosing operative procedure were general condition of the patient, type of peritonitis and the site and number of perforations. The operative procedures used are illustrated in Table VII.

**TABLE-VII OPERATIVE PROCEDURE**

Operative Procedure	No of Patients	%
Primary closure of perforation alone	59	77.63
Resection of perforation with end-end anastomoses	6	7.89
Primary exteriorization of perforation as temporary ileostomy	11	14.47

Postoperative care included nil by mouth, nasogastric tube suction for 3-5 days, intravenous fluids and antibiotics for variable periods. Eleven patients received partial parenteral nutrition while 7 patients were put on total parenteral nutrition. Postoperative complications included wound sepsis in 23 patients and re-perforation in 12 patients. The re-perforated cases were detected by persistent temperature, rising pulse and respiration rate, prolonged postoperative ileus, faeculent discharge from the wound or drain. All the re-perforated cases were reopened and the perforation was exteriorized as temporary ileostomy.



Our mortality rate was 17 patients (22.36%) which could be compared with the mortality rate of other centres (Table VIII). Mortality is considerably low as compared to other authors.

**TABLE-VIII MORTALITY AS COMPARED TO OTHER AUTHORS**

Name of studies	No of Patients	%
Wardhan et al (India)	19/102	19
Akoh J/A (Nigeria)	34/60	57
Meier et al (Nigeria)	35/108	32
Aguyen vs Vietnam	15/53	18
Wanderwerf et al (Ghana)	19/59	32

## DISCUSSION

Typhoid enteric perforation is the second common complication (3.3%)<sup>2</sup> after intestinal haemorrhage (12.5%) of typhoid fever. The number of typhoid perforations increase year by year. We found out in our study that there were only 11 cases in 1991 but the number rose to 36 in 1994. Causes for this increase are: increase in the total number of typhoid patients due to over population, lack of mass education, poor sanitation, contaminated foods, poor vaccination program. Delay in the diagnosis of typhoid perforation is due to poverty, illiteracy, poor communication and quackery, treatment failure and increase in resistant strains.

In our study the high incidence in males is in conformity with the study of Meier et al,<sup>3</sup> where the number is 75 males to 33 females. This high incidence in males is mainly due to the eating habits of contaminated foods outside their homes while the females mostly consume home made foods. Also it was clear from our analysis of 76 patients that the incidence of typhoid perforation is higher in the second decade of life. This again is in conformity with the study of Meier et al<sup>3</sup> where he showed 19 years as the average age of the patient.

Illiteracy, ignorance and poor communications play its role either in the causation of typhoid fever or the delay in the diagnosis of typhoid enteric perforation as was evidenced in the tribal belt of Jamrud / Landi Kotal, which showed the highest incidence of 36.84%.

We believe that the conservative management of typhoid enteric perforation is no longer practicable as it carries substantially increased mortality.<sup>6,8,9</sup> Various surgical procedures in current use are Primary closure of perforation,<sup>3,5,6,8,11,13</sup> primary exteriorization of perforation as temporary ileostomy<sup>5,10,13</sup> ileotransverse anastomoses<sup>13</sup> and resection of perforation with end-end anastomoses<sup>13</sup>.

The common postoperative complications were wound sepsis and reperforation of the primarily closed cases. Postoperative hospital stay was 5-10 days in 39 patients, 7-14 days in 27 patients while only 10 patients stayed for more than 21 days. Mortality rate was high in the 4th decade of life.

As typhoid enteric perforations are not only increasing but also carry considerable morbidity and mortality, it is time to take some measures preventive and curative to control it.

Early diagnosis and timely surgery with good patient care can improve the outcome of these very morbid patients. Travelers to the endemic areas should also take proper precautions.

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# SERUM URIC ACID LEVELS IN PATIENTS OF ISCHEMIC HEART DISEASE

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## ABSTRACT:

*A comparative study of serum uric acid in 90 patients of IHD with 31 age and body mass index matched control subjects was carried out at Basic Medical Sciences Institute, JPMC, Karachi to find out the possible relationship between serum uric acid and incidence of ischemic heart disease. Serum uric acid was found to be significantly high ( $P < 0.001$ ) in patients of ischemic heart disease as compared with control subjects.*

**KEY WORDS:** Uric Acid, risk factor, ischemic heart disease

## INTRODUCTION

Ischemic heart disease (IHD), also designated as coronary heart disease, refers to a group of closely related syndromes caused by an imbalance between the myocardial oxygen demand and blood supply<sup>1</sup>. Because the heart has no store of oxygen, its relative high rates of energy expenditure within seconds of coronary occlusion, results in a sudden striking decline of myocardial oxygen tension and loss of contractility<sup>2</sup>. Multiple risk factors, present both in patients and environment have shown to play a role in the development of ischemic heart disease. Major coronary artery disease risk factors established are dyslipidemia, hypertension, tobacco use and diabetes mellitus. The other coronary artery risk factors include physical inactivity, obesity, family history of coronary artery disease, age, gender, hemostatic factors, hypocysteinemia, alcohol consumption and psychological factors<sup>3</sup>.

Uric acid is a purine compound that circulates in plasma as sodium urate,<sup>4,5</sup> In human uric acid is the major product of catabolism of the purine nucleosides, adenosine and guanosine. Purines from catabolism of dietary nucleic acid are converted to uric acid directly. However, the bulk of purines ultimately excreted as uric acid in the urine arises from degradation of endogenous nucleic acids<sup>6</sup>.

Renal handling of uric acid is complex and involves four sequential steps. Glomerular filtration of virtually all the uric acid in capillary plasma entering the glomerulus

reabsorption in the proximal convoluted tubule of about 98 to 100% of filtered uric acid. Subsequently, secretion of uric acid into lumen in the distal portion of the proximal tubule and further reabsorption in the distal tubule. The net urinary excretion of uric acid is 6 to 12% of the amount filtered<sup>7</sup>.

The high incidence of arteriosclerosis as a complication of gout has been well known for over 50 years, but the question of more specific relationship of hyperuricemia to coronary artery disease has been raised comparatively recently<sup>8</sup>. Uric acid may damage the intima of vessels, predisposing them to deposition of cholesterol<sup>9</sup>. The association of elevated serum uric acid with coronary artery disease incidence of mortality is inconsistent, while some studies found that hyperuricemia was an independent predictor of coronary events.<sup>10</sup>

## PATIENTS AND METHODS

This study involved 90 patients admitted to National Institute of Cardiovascular Diseases, Karachi. Ischemic patients suffering from diabetes mellitus, renal diseases, gout, malabsorption syndrome, hepatitis and on diuretics were not included in the study. The results were compared with 31 BMI matched healthy subjects selected among the attendants of the patients.

Serum uric acid was estimated by the enzymatic calorimetric method using kit cat number UA 230 supplied by Randox UK. The patients were categorized according to blood pressure measurement.

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Group A=	Control
Group B=	Normotensives with ischemic heart disease
Group C=	Hypertensives with ischemic heart disease
Group D=	Hypertensives without ischemic heart disease

## RESULTS

Serum uric acid level of the patients was compared with normal control values, statistical significance of the results was assessed by "t" test. Table I show that the level of serum uric acid in normotensives with ischemic heart disease (group B) hypertensives with ischemic heart disease (group C) and hypertensives (group D) was significantly high  $P < 0.001$ , as compared to control group A.

**TABLE-I VALUES OF SERUM URIC ACID OF TEST SUBJECTS COMPARED TO CONTROL (MEANS $\pm$ SEM)**

Groups	A	B	C	D
Number of subjects	31	30	30	30
Values in mg/dl	4.31 $\pm 0.213$	6.84 $\pm 0.381$	6.87 $\pm 0.191$	7.46 $\pm 0.308$
Comparison with control		$P < 0.001$	$P < 0.001$	$P < 0.001$

## DISCUSSION

It has been established that the risk factor concept in ischemic heart disease is based on the findings of statistically significant association between incidence of ischemic heart disease and values for the variables in question.<sup>11</sup> Gettler et al<sup>12</sup> reported higher mean serum uric acid levels in young men with ischemic heart disease compared with healthy control.

At any age in either sex, risk of developing clinical manifestation of ischemic heart disease was greatly influenced by the appearance of a number of atherogenic metabolic risk factors. Included among those were blood lipids, carbohydrate tolerance, uric acid and fibrinogen. Risk is greatly enhanced where these occur in combination and is still further augmented by hypertension.<sup>13</sup> Hyperuricemia stabilizes platelet aggregation and enhances thrombotic tendency.<sup>14</sup> The present study results are supported by Gerter et al, Kannel and Brand et al. While Freedman et al<sup>15</sup> have found no association of uric acid with either ischemic heart disease incidence or mortality. Serum uric acid level is strongly related to ischemic heart disease. In addition, relationship of uric acid with incidence of ischemic heart disease appears to be associated with high blood pressure.

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# OESOPHAGEAL ATRESIA AND TRACHEOSOPHAGEAL FISTULA

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## ABSTRACT:

Fortysix neonates with esophageal atresia and tracheoesophageal fistula were admitted in Mayo Hospital, Lahore over a three and half years period from June 1995 to December 1998. Of these 76.08% were male. Delayed referral of 24 hours or more was noted in 78.20%. Among the neonates admitted 88% had moderate to severe chest infection and 70% weighed three or more than three kilograms. Associated congenital anomalies were noted in 41.3%, of which high imperforate anus accounted for more than 50%. Ligation of fistula and primary oesophageal end to end anastomosis was performed in 28 patients and in 4 neonates oesophagostomy and gastrostomy were performed. Survival rate of category A was 80% and overall survival was 40.63%.

**KEY WORDS:** Oesophageal atresia, Congenital anomalies

## INTRODUCAION

Surgery of oesophageal atresia and tracheoesophageal fistula is still a challenge to the paediatric surgeon in our country. Associated congenital anomalies are the main cause of death in developed countries, while in developing countries like Pakistan many other factors including sepsis are responsible for the higher mortality. In this article we are presenting our experience of this anomaly and highlighting factors responsible for poor prognosis.

## PATIENTS AND METHODS

Record of patients of oesophageal atresia and tracheoesophageal fistula, admitted in Paediatric Surgery Ward, Mayo Hospital, Lahore was maintained and analyzed for age, weight, chest infections, congenital anomalies, post operative complications, hospital stay and mortality. Patients of Waterston Category A and B were operated after resuscitation. Thoracotomy was performed through 4th intercostal space, fistula ligated and an end to end esophageal anastomosis was made. Four patients of Waterston type C were put on parenteral nutrition and ventilatory assistance after diversion oesophageal and gastrostomy. Esophageal replacement was deferred for later life.

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## RESULTS

Forty-six neonates were admitted with oesophageal atresia and tracheoesophageal fistula. Thirty five (76.08%) neonates were males and 11 (23.92%) females. Ages at the time of admission are shown in Table-I and weight in Table-II. Severe chest infection was observed in 25 (54.34%) neonates. Associated anomalies were discovered in 19 (41.30%) neonates; 11 (23.92%) had high anorectal malformation, 4 (8.7%) had skeletal and 3 (6.52%) had cardiac anomalies.

Waterston classification and mortality of non-operated (14 cases) is shown in Table III. Waterston classification and survival of 32 neonates operated is shown in Table IV. Primary repair was performed in 28 patients with fistula. Diversion esophagostomy and gastrostomy was performed in only four neonates. Feeding through nasogastric tube was started on the 2nd day after definite repair. Post-operative complications included 12 pneumonias, 3 pneumothorax, 7 sepsis and leakage of anastomosis in five. Thirteen neonates survived.

TABLE-I AGE AT PRESENTATION	
Age	No. and percentage
Less than 24 hours	10 (21.74%)
24-48 Hours	10 (21.74%)
48-72 Hours	7 (15.22%)
More than 72 Hours (up to 15 days	19 (41.30%)

**TABLE-II WEIGHT AT THE TIME OF ADMISSION**

Weight	No. and Percentage
Less than 2000 Grams	2 (4.34%)
2000-2500 Grams	12 (26.09%)
2500-3000 Grams	20 (43.48%)
More than 3000 Grams	12 (26.09%)

**TABLE-III WATERSTON CLASSIFICATION AND MORTALITY (Non Operated cases)**

Category	No. of Patients	Mortality
A	0	0
B	2	2 (100%)
C	12	12 (100%)
Total	14	14 (100%)

**TABLE-IV WATERSTON CLASSIFICATION AND SURVIVALS (Operated Cases)**

Category	No. of Patients	Survivals
A	10	8 (80%)
B	10	4 (40%)
C	12	1 (8.33%)
Total	32	13 (40.63%)

## DISCUSSION

In the past four decades survival of patients with oesophageal atresia and fistula has improved due to four factors, viz. early diagnosis, prompt transportation to paediatric surgical units, intensive pre-operative and postoperative care. The number of cases per year in our study is slightly more when compared to one of the surgical units in United States where on an average ten cases are dealt with<sup>1</sup>. Random clusters were observed in France and increased prevalence is noted in Norway, South Africa and Sweden from 1965 to 1975<sup>2</sup>. Males accounted for about 76% in our study against a 55% preponderance from USA<sup>1</sup>.

In our study less than 50% patients reported to our surgical services after 72 hours of delivery. This delay changes category from A to B by pulmonary involvement and changed prognosis from good to poor. Neonates with chest infection were 84.77%. This is a major problem for which patients need vigorous respiratory assistance.

Associated congenital anomalies in our patients were 41.30%. A wider range of associated congenital anomalies is documented like ectopic, stenosed or absent right upper bronchus,<sup>3</sup> tracheomalacia, atelectasis, upper esophageal duplication,<sup>4</sup> VACTERAL association,<sup>5</sup> microphthalmos, hypospadias<sup>6</sup> and cardiac defects.<sup>7,8</sup> In an American study cardiac defects were noticed in 38%, skeletal 19%, neurological 15%, renal 15% and anorectal 8%.<sup>1</sup> Exomphalos major is also reported in one case<sup>9</sup>.

Rare associations are with pyloric stenosis<sup>10</sup>, dextrocardia<sup>11</sup> and hiatal hernia.<sup>12</sup>

We performed a single layer anastomosis with 4/0 silk interrupted stitches like Sharma.<sup>13</sup> One layered anastomosis was done in 81% neonates in USA, two layered in 17% while esophageal myotomies were performed in 17% cases.<sup>1</sup> We retain transanastomotic tube and start early feeding. This causes no leak, stricture or regurgitation and reduces the cost.<sup>14</sup>

Oesophageal atresias without fistula have long gap atresia usually more than 3.5 cm. Byle performed primary single layer anastomosis even in severe tension, alongwith Nissen's fundoplication to avoid regurgitation. He also performed postoperative dilatations to avoid strictures. He reported good results for long gap atresias. We perform staged procedure oesophagostomy, feeding gastrostomy and oesophageal substitution at later age. With reverse gastric tube or colon sepsis was our major problem. secondary to chest infections.

Delay in proper management due to late referral caused low perfusion at the cellular level and accompanied by suppressed immunity is responsible for poor prognosis. This fundamental observation that early preservation of pulmonary segments reduces complications in patients with tracheoesophageal fistula is described by many surgeons.<sup>1,7,13</sup> Engum and Grosfeld from States reported complications like leakage 16%, recurrent fistula 3%, stricture 35%, and gastroesophageal reflux 58%. In Japan cardiopulmonary failure is the major complication.<sup>7</sup>

Overall mortality in our operated patients is 59.37%, mainly due to sepsis, originating from chest infections. In an Italian study mortality was 95% in 1972-76, this dropped to 50% in 1991 due to early surgery and better antibiotics.<sup>13</sup>

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# RANDOMIZED STUDY OF CONVENTIONAL OPEN CHOLECYSTECTOMY, MINI CHOLECYSTECTOMY AND LAPAROSCOPIC CHOLECYSTECTOMY

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## ABSTRACT:

*One hundred and twenty healthy & fit patients suffering from chronic cholecystitis/cholelithiasis over a period of two years and four months (from 1st Feb to 31 May 1999.) were randomized to conventional open, mini cholecystectomy, and laparoscopic cholecystectomy (40 patients in each group). Three patients in laparoscopic group and two patients in mini cholecystectomy group were converted to conventional open cholecystectomy. Average hospital stay was 4,3 and 1.5 days respectively.*

*Post operative pain and analgesia requirements were much less in laparoscopic group than mini cholecystectomy and conventional cholecystectomy groups. Postoperative morbidity was more in conventional open than Mini cholecystectomy and laparoscopic group. Cosmetic results were acceptable in mini cholecystectomy and best in laparoscopic cholecystectomy. Return to full activity period was 3,2 and 1.2 weeks respectively.*

**KEY WORDS:** Cholecystectomy comparison, analgesic requirement, cosmetic results.

## INTRODUCTION

Chronic cholecystitis / cholelithiasis is a quite common condition. Cholecystectomy is the second most common operation next to appendectomy. Asymptomatic cholelithiasis need not be treated surgically but symptomatic cholelithiasis needs treatment and there are many options for management of gall stones like oral dissolution therapy, percutaneous cholecystolithotomy, percutaneous dissolution with methylterbutyl ether (MTBE) instillation, shattering with extra corporeal shock wave lithotripsy and its excretion into duodenum through patent cystic duct and CBD. Results of these options were disappointing because of high rate of failure in clearing gallstones and high rate of recurrence. Conventional cholecystectomy has increased morbidity as alternate procedures were tried like mini laparotomy cholecystectomy until laparoscopic cholecystectomy became established.

In this study we randomized 120 patients to open conventional

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ventional cholecystectomy, mini laparotomy cholecystectomy and laparoscopic cholecystectomy for assessing the safety, cost effectiveness and acceptability of mini cholecystectomy and laparoscopic cholecystectomy.

## PATIENTS & METHODS

One hundred and twenty patients were randomized in three groups (40 patients in each group.) suffering from chronic cholecystitis / cholelithiasis. Eightynine (75%) of these patients were female who were fit and healthy. Patients who were diabetic, and suffering from cardiac / renal and pulmonary problems were excluded from the study. After routine investigations patients were admitted in the morning and surgical procedures conducted in the afternoon.

In conventional open cholecystectomy an upper paramedian incision of more than 10 cm given. Calott's triangle properly displayed, cystic duct and artery double ligated with one vicryl and gall bladder dissected from the bed. Abdomen was closed in layers after leaving a drain in the

sub hepatic area near gall bladder bed. In mini cholecystectomy, a transverse incision was given for classical modern mini cholecystectomy. A 6-cm incision starting from midline and extending laterally short of subcostal angle is made. Anterior rectus sheath incised, rectus muscle cut for 2 cm or retracted medially. Posterior rectus sheath along with peritoneum incised in the line of incision. With help of long thin retractors, right lobe, stomach and gut retracted and Callot's triangle properly displayed. Classical fundus first method of dissection done, cystic duct and artery double ligated hemostasis secured and incision closed in layers with zero proline with out drain.

In laparoscopic cholecystectomy group classical four port technique was applied. Cystic duct and cystic artery double ligated / clipped separately after proper display of Callot's triangle and back dissection of neck of gall bladder. Gall bladder dissected from bed and retrieved from infra umbilical port. Injection marcaine given proportionally at all four port sites to minimize post operative pain and encourage early mobilization. Three doses of third generation cephalosporin given for prophylaxis, four hours pre operatively, during induction and eight hours post operatively.

## RESULTS

In conventional open cholecystectomy fever and post operative vomiting occurred in 7 patients. Wound infections in 4, bleeding in two patients. One patient developed transient jaundice. Two incisional Hernias occurred after one year of followup.

In mini laparotomy cholecystectomy three wound infections, nausea, vomiting and fever occurred in four patients. Haematoma and sub-hepatic abscess formation in one patient leading to readmission and exploration. One patient had CBD damage and biliary leakage while two patients were converted to open conventional cholecystectomy because of difficulty in display of Callot's triangle and profuse bleeding. One patient developed incisional hernia.

In laparoscopic cholecystectomy group three patients were converted to open cholecystectomy, two because of thick adhesion and one because of profuse bleeding, which was difficult to manage laparoscopically. Two patients developed minor port site infections (Infra umbilical port) and one paraumbilical hernia seen. Hospital stay and return to full activity is shown in Table I.

## DISCUSSION

Conventional open cholecystectomy, first performed by a German Surgeon Langenburgh in 1882, has been a "Gold Standard" treatment for symptomatic gall bladder disease and was only treatment option,<sup>1</sup> until first laparoscopic cholecystectomy in Leon France by Murret in 1987. Open

**TABLE-I** **HOSPITAL STAY AND RETURN TO FULL ACTIVITY**

Procedure	Conventional Cholecystectomy	Mini Cholecystectomy	Laparoscopic Cholecystectomy
Mean hospital Stay	4 Days	3 Days	1.5 Days
Return to Full Activity	3 weeks	2 weeks	1.2 weeks

conventional cholecystectomy is being replaced by laparoscopic cholecystectomy all over the world, because of its safety and acceptability. Conventional open cholecystectomy, because of its increased morbidity and mortality, is now less popular. Prior to laparoscopic era multiple options were tried for managing cholelithiasis<sup>2</sup>. The criteria for stone shattering and recurrence rate of gallstones was very high so results were not satisfactory. Minimal access surgery became the answer to this quite common condition.

Laparoscopic surgery, which is highly technical field, needs a trained team of personnel. Alongwith training of surgeon, instrumentation is extremely important; it cannot be performed safely if one or the other instrument is missing<sup>3</sup>. Mini cholecystectomy is an attractive alternate to laparoscopic cholecystectomy, economical, safe with acceptable cosmetic results.<sup>4</sup> Mini cholecystectomy is done to a transverse incision starting in the mid line and extending laterally short of subcostal angle. Mini cholecystectomy, depending on the length of transverse incision, is Micro mini cholecystectomy which is up to 4 cm, modern mini cholecystectomy between 4.1 to 6 cm in length and conventional mini cholecystectomy between 6.1 cm to 10 cm in length. Modern mini cholecystectomy is the most acceptable incision with good access and reasonable scan which is cost effective.<sup>5</sup> In patents who are obese or have adhesions, it is better to convert in that situation rather than causing a biliary damage.<sup>6,7,8</sup>

Laparoscopic cholecystectomy, which is getting popular day by day, has replaced conventional cholecystectomy since first successful laparoscopic cholecystectomy in 1987. It is the treatment of choice in gall bladder disease and can be successfully completed in 95% of patients. The surgeon must abandon the procedure if there is no progress during dissection, otherwise there are increased chances of complications, specially damage to biliary tree.<sup>9</sup> If laparoscopic cholecystectomy is successful, there is short hospital stay, best cosmetic results, less analgesic requirement and early return to full activity.<sup>10,11,12</sup>

In conclusion mini cholecystectomy is an attractive alternate to laparoscopic cholecystectomy. Mini cholecystectomy and laparoscopic cholecystectomy cosmetic results are comparable. Mini cholecystectomy is cost effective with short Hospital stay compared with conventional open

tomy is safe, with less analgesic requirement, short hospitalization time, best cosmetic result and earlier return to full activity.

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# EVALUATION OF PROGNOSTIC FACTORS IN EXTENSIVE THERMAL BURNS

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## ABSTRACT:

*Extensive burns are catastrophic injuries which not only hurt the patient physically but also affect in terms of cost and emotional suffering. To determine the effects of different prognostic factors on the outcome of extensively burnt patients, a prospective study was conducted at Surgical Unit IV, Nishtar Hospital, Multan. Of the 50 patients above 15 years included in this study with extensive thermal burns, 35 were below the age of 30 years, 29 being male. In 45 patients burns occurred accidentally while in 3 they were homicidal and in 2 suicidal. In 30 patients, the cause was dry heat while in the rest it was scald or electricity. Most of these 30 patients had no associated inhalation injury. Thirtythree patients were in shock on arrival while 17 were haemodynamically stable. Five had associated injuries in addition to burns. Thirtythree had burns involving more than 30% of TBSA. Fortyone patients had second degree and third degree burns. Fortytwo had primary areas involved while 18 had concomitant diseases. All these belonged to lower middle and poor class. Fortytwo patients reached hospital more than 2 hours after burns and only 15 patients had received pre-admission first aid. Twentysix patients died in the hospital. Eleven developed hypertrophic scars while 5 developed contractures.*

*Although burn injury is a universal problem, it usually involves males below 30 years of age and is usually caused by accidental fires. Patient's age, extent of burn, depth of burn and delay in resuscitation are major factors influencing morbidity.*

**KEY WORDS:** Burns, Prognostic Factors

## INTRODUCTION

Burn injury is the most serious and devastating form of trauma that man sustains. Million of people all over the world are hospitalized each year for treatment of burns and thousands die. It is estimated that in the UK alone, 10,000 burn victims are admitted each year and 700 die<sup>1</sup>. In our country, although exact figures are not available, it is observed that about 10% of the beds in surgical ward of every teaching hospital are occupied by burn victims. In under-developed countries like ours, where specialized burn units do not exist, the morbidity and mortality of such injuries is very high.

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Most fatalities that occur are due to thermal burns, which are caused by accidents related to cooking, faulty heating systems, house fires, inattentive use of cigarettes, suicidal or homicidal attempts. The injury results not only in the local destruction of skin but also derangement of haemodynamic, metabolic, nutritional, immunological and physiological homeostatic mechanisms. Extensive burn patients require recovery period extending over months or years. Mortality is not the only yardstick measuring failure or success in burn victims, survival without functional or social rehabilitation is a failure. Similarly death of a near total BSA burn may not be considered as failure. Survival of burn injury is related mostly to age, burn size and presence or absence of inhalation. Other variables including area (site of body involved), associated injuries, pre-existing disease, delay in resuscitation and poor compliance of

the patient also determine the eventual outcome. The purpose of our study was to evaluate the effect of the above mentioned factors on the final outcome of burn patients.

## PATIENTS & METHODS

This is a prospective study carried out on 50 patients with extensive thermal burns (i.e. burns that cover more than 10% of total body surface area (TBSA) at the 40 bedded Surgical Unit IV of Nishtar Hospital, Multan over a period of 18 months from June 1997 to November 1998. Patients of either sex, above 15 years of age, who sustained extensive thermal burns were included in the study while those with less than 10% burns or below 15 years of age were excluded.

Patients were resuscitated initially by giving I/V fluids, H<sub>2</sub> receptor antagonist, analgesics, antibiotics and tetanus prophylaxis. Oxygen inhalation was given if needed, wounds were dressed with flamazine cream and intake/output record was maintained. Fasciotomy and tracheotomy were done where indicated. The information was entered in a proforma prepared for the purpose.

## RESULTS

Of the 50 patients with extensive thermal burns managed, female to male ratio was 1:1.38. Minimum age was 16 years, whereas maximum age was 60 years with a mean of 30 years. Thirty five patients were below 30 years. Fortyfive had accidental burns, 2 were suicidal and 3 homicidal. Nature of burn in 30 patients was dry heat (flames), in 5 electricity and in 15 scalds. Twenty patients had features of inhalation injury at the time of admission. Thirtythree patients were in shock and 17 were haemodynamically stable at the time of admission. 10% patients had associated injuries, 6% had fracture of long bone and 4% had head injury.

As regards the percentage of total body surface area involved, 17 patients had 10-30% burn while 8 patients had 31-50% burn, 14 patients had 51-70% burn and 11 patients had more than 70% burn. With regards to depth of burn, 9 patients had predominantly first degree burns. 24 had predominantly second degree burns and 17 had predominantly third degree burns. In the present study, 42 patients had extensive burns involving one or more of the primary area i.e. face, neck, hands, feet and perineum, in addition to rest of the body. While in 8 the burn was confined to trunk and limbs only.

Eight patients reached hospital within 2 hours, while the rest reached later. Only 15 patients had received first aid before admission to the emergency ward. Hospital stay of burn victims were from 1 hour to 35 days with a mean of 18 days. Out of 5 patients who suffered electric burn, 2 needed amputation of an affected upper limb. Twenty six patients died in the hospital. Eleven devel-

oped hypertrophic scars and 5 (20.8%) developed contractures. Among the 26 who died in the hospital, 4 died within 24 hours as they had more than 74% burns and the cause of death was shock. Eleven patients died in the first week and cause of death was acute renal failure, cardiac and respiratory complications and associated head injury. Nine died during the second week due to acute renal failure and ARDS while 2 patients died after second week due to septicaemia and multiple organ failure.

## DISCUSSION

Extensive thermal burn is a world wide problem, affecting people both in developed and under developed countries. During the period of this study 76 (9.66%) out of 790 trauma cases were those of burns and 26 (52%) of the 50 adult extensive thermal burn victims died. Extensive thermal burns affect 300 people per million population each year in the western world and more than half of these victims are less than 20 years of age<sup>2</sup>. The reason for incidence of burn injury in young adults is that they are more actively involved in day to day life activities which make them more vulnerable to extensive thermal injury. There were 29 male and 21 female patients with a male to female ratio of 1.38:1 in our study. Similar results are observed in other studies<sup>3,4</sup>. The reason of this high male preponderance lies in our social setup and norms. Also they have to work, in the most cases without proper protective measures. Sixty percent of burns were caused by flame, 30% were scalds and 10% were electric burns. Similar observations have been made in other studies<sup>5,6</sup>.

Twentyone patients were having associated inhalation injury. Amongst them 16 died. The present study shows that the incidence of death is raised significantly with associated inhalation injury. It is comparable with other studies<sup>1,7</sup>. Inhalation injuries damage the respiratory tract and increase CO concentration in the blood leading to hypoxia and respiratory failure. Moreover, there is increased chance of bronchitis and pneumonia in these patients, which further increases hypoxia and respiratory failure.

The presence of associated injuries with patients of extensive thermal burns increase the mortality and morbidity. In the present study, 5 patients had associated injuries. Amongst them 2 had head injuries and one died in the first week. While the other 3 had fractures of long bones, 2 of them later developed osteomyelitis, which increased their hospital stay and hence morbidity.

It has been found that the mortality and morbidity of burn patients is directly related to extent of burns; greater the surface area of body involved, greater is the mortality<sup>2,3,7,8</sup>. In the present study, out of 50 patients there were 17 patients who had 10-30% burn. Of these only one patient died, the mortality was 3.33%. There were 8 patients who

had 31-50% burn and out of these 4 died showing mortality of 50%. While 14 patients had 51-70% burns and 12 of these died with a death incidence of 65.7%. There were 11 patients who had 71% to 100% burn and all of these died, thus the mortality was 100%. Thus the results of present study also corresponds with results of studies published in the national and international literature<sup>2,3,7</sup> (Table 1).

The increase in mortality is also related to increased complications like renal failure, wound infection and septi-

**TABLE-I**                      **COMPARISON OF DEATH IN RELATION TO**  
**EXTENT OF BURN**

S.No.	Extent of Burn	Present Study (n=28)	Study of Civil Hospital Karachi (n=169)
1.	10-30%	1 (3.60%)	5 (2.96%)
2.	31-50%	4 (14.26%)	64 (37.87%)
3.	50% and above	23 (82.14%)	100 (59.17%)

caemia etc. The depth of burn wound is another important determinant of prognosis in patients with extensive burns, deeper the burn greater the mortality. The depth of burn also determines the type of wound care, duration of hospital stay and cosmetic outcome. It has been found that if deep wounds are not treated properly, there are increased chances of complications like contracture, chronic ulceration and deformities, thus increasing morbidity.<sup>7</sup>

In the present study, out of 50 patients, 9 had predominantly first degree i.e. superficial burns and in all of them recovery was smooth and they had a mean hospital stay of 7 days. Twenty four patients had predominantly second degree burns. An increased incidence of wound infection was seen in these cases. More than half of these patients required repeated wound debridements. Their mean hospital stay was about 18 days. In most of these patients the wound closure occurred spontaneously. Only 4 required skin grafting. The remaining 17 patients had predominantly third degree burns. Their average stay in hospital was prolonged to more than 3 weeks. Almost all of these patients required skin graft. Among the 41 patients with second and third degree burns, 11 came after 1-3 months with hypertrophic scars and 5 returned with contracture at different sites i.e. neck, axilla and knees etc.

Increased mortality in deeply burned patients was due to systemic complications such as, chest infections and septicemia and renal failure etc. In patients of extensive thermal burns the presence of pre-existing cardiovascular, respiratory, renal or metabolic diseases can complicate the case and increase mortality. Similarly, alcohol and drug addiction predisposes a patient to burn and complicate the treatment.<sup>7</sup>

In the present study, out of 50 patients, 6 had chronic respiratory disease. Two of them died in the first week due to respiratory failure and the others had a prolonged hospital stay mainly due to chest complications. Two patients had chronic renal failure (CRF) and prolonged stay mainly due to repeated chest and wound infections and one of them went into acute renal failure requiring haemodialysis. Three patients had diabetes mellitus, one died due to myocardial infarction, while the other two had delayed healing and infection. One patient had epilepsy and suffered repeated fits for which he had to be kept sedated. This resulted in chest infection which caused delayed recovery. Five patients were heroin addicts and posed great difficulty in management as they had withdrawal syndrome and needed psychiatrist help. One of them died due to decreased body resistance and poor compliance, while the other 4 needed relatively longer healing time due to wound infections. All these four patients later developed flexion contracture and stiffness of affected parts, as they did not follow instructions about physiotherapy.

Extensive thermal burns are poorly tolerated by patients at extremes of age.<sup>2,3,7</sup> Another study showed that chances of survival become poorer with age after 40 years.<sup>7</sup> In our study 9 (18%) patients were above the age of 40 and 7 (78%) of them died, one died in the first 24 hours due to shock and another died of cardiac complications in the first week. Five patients died in the first 7-10 days due to chest and wound infections leading to septicemia.

In the present study, out of 50 patients, wounds involved face, neck and limbs in 42 patients. Of these 26 died. Most of them had associated inhalation injuries and septic complications. In the remaining patients 8 patients later developed flexion contractures especially of axilla and neck. One patient had corneal ulceration followed by corneal scars and developed permanent visual impairment, while 4 patients developed hypertrophic scars with complaint of itching.

The causes of respiratory impairment were severe oedema of soft tissues of face and neck and increased chest infection. Involvement of flexion creases and inappropriate physiotherapy led to increased incidence of contracture formations.

Delay in resuscitation increases mortality and morbidity. It is estimated that a delay of more than 2 hours in initiation of resuscitation greatly increases morbidity and mortality of patients with extensive thermal burns<sup>7</sup>. In this study, 8 patients reached hospital within 2 hours after burn injury, while the other 42 reached later. Fifteen who received

first aid before hospital admission were relatively stable as compared to the others and the incidence of early complications like shock and acute renal failure were also low. The usual causes of delay include lack of appropriate transport facilities, non-availability of proper medical care, poverty and lack of proper guidance.

Poor compliance of patients also greatly alters the outcome. Literature reveals that some patients develop certain psychological problems due to which they show none or poor compliance.<sup>7</sup> Moreover drug and alcohol abuse is also an important cause of poor compliance. Five patients in this study, being heroin addicts were non-cooperative and showed poor compliance. Most of the patients, in our study were poor and had financial problems due to which they could not afford costly medicines specially antibiotics. This had direct effect on their prognosis. Other factors responsible for poor compliance of patients in our study, were depression and illiteracy of patients and attendants due to which they did not fully follow instructions of the medical staff.

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# BLEEDING MECKEL'S DIVERTICULUM – A KNOWN BUT RARE ENTITY

## A CASE REPORT

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M. NAEEM KHAN

### ABSTRACT:

*Meckel's diverticulum is a remnant of embryonic omphalomesenteric duct. In 20-30% of the cases ectopic tissue is present, which may be either gastric or pancreatic. Mostly it is asymptomatic but may be associated with symptoms of bleeding due to ulcer formation, perforation, intestinal obstruction or discharge from the umbilicus. We are reporting a case of Meckel's diverticulum with bleeding diagnosed on the basis of positive radio-isotope scan.*

**KEY WORDS:** *Meckel's diverticulum, technetium scan, ectopic gastric mucosa*

### INTRODUCTION

Meckel's diverticulum can present with a variety of symptoms including intestinal obstruction, gastrointestinal ulceration and haemorrhage, peritonitis, an umbilical mass, fistula or sinus. Bleeding Meckel's diverticulum usually has at least some gastric mucosa producing acid, leading to irritation and haemorrhage.

### CASE REPORT

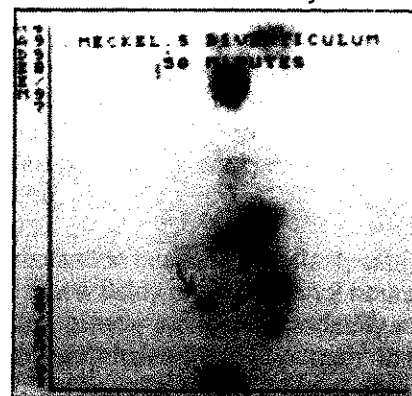
A one and a half year old male child was admitted with central abdominal pain of five days and fresh bleeding per rectum for three days. The patient was treated by a local doctor with intravenous fluids and parenteral antibiotics. He remained symptom free for twenty four hours but relapsed soon after. Initially the bleeding per anum was black tarry in colour but later became fresh blood.

The patient lost about half a litre of blood. There were no associated symptoms and the past history was insignificant. On clinical examination there was pallor and patient's abdomen was tender in the right iliac fossa. There was no palpable mass and bowel sounds were normal. Rectal examination revealed fresh blood and melaena stool.

Because of rapid blood loss he had to be resuscitated  
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with blood transfusion. Leukocyte count, differential count and coagulation profile were within normal limits. Plain x-ray abdomen was also normal. Isotope scan with technetium-99m pertechnetate revealed uptake in the right iliac fossa (Figure 1). The finding was suggestive of ectopic gastric mucosa (Meckel's diverticulum). At laparotomy, Meckel's diverticulum was found about fifteen centimeters from the ileocecal junction. It was adherent with the loops of small intestine. Adhesions were released and diverticulectomy was performed with ileoileal anastomosis. Histopathology report of the specimen confirmed the presence of gastric mucosa. The peptic ulceration was in the region of ectopic gastric mucosa. Patient made an uneventful recovery.



**Figure 1;** Isotope scan has clearly demonstrated high activity in Meckel's diverticulum. This is an indication of the presence of ectopic gastric mucosa.

## DISCUSSION

Meckel's diverticulum is present in 2-3% of the population, but majority of patients remain asymptomatic throughout their life.<sup>1</sup> Meckel's diverticulum results from a failure of complete obliteration of the intestinal and of the embryonic omphalomesenteric duct abnormalities.<sup>2</sup> It is true diverticulum containing all the layers of the intestinal wall and is present on the antimesenteric border of the ileum, usually within 80 cm of the ileocaecal valve.<sup>1</sup> Ectopic tissue is found in 20-30% of the cases which is approximately 2-3 fold in case of symptomatic patients.<sup>3</sup> The mucosal lining of the Meckel's diverticulum can be gastric (15%), ileal, colonic, duodenal and rarely there may be pancreatic tissue (5%).<sup>2</sup> Bleeding occurs almost exclusively in those diverticulum, which possess at least some gastric mucosa. Amongst those that are symptomatic, approximately 45% appear within the first two years of life.<sup>4</sup> Our patient was one and a half years old.

Haemorrhage from Meckel's diverticulum is usually copious, bright red and usually painless. Haemorrhage is the most common complication among the other complications that occur in Meckel's diverticulum. Bleeding per rectum from a Meckel's diverticulum occurs in majority of children before one year of age. Our patient had similar presentation. Radionuclide scanning using technetium 99m pertechnetate is the best investigation for the diagnosis of Meckel's diverticulum.<sup>5</sup> In 1982, Sfakianakis and Haase proposed the use of gamma camera to increase the sensitivity of radionuclide imaging of gastric mucosa in Meckel's diverticulum.<sup>6</sup> Unfortunately Meckel's diverticulum<sup>6</sup> could still remain undetected despite this technique.

Although Meckel's diverticulum containing gastric mucosa can be diagnosed by Tc99m pertechnetate scan, but in our experience this was the first patient in the last ten years who had a positive scan. The reason for such a low true positive result could be that the other patients did not have a sufficient amount of gastric mucosa in the diverticulum and thus it was not picked up by the radionuclide tracer. The patient, we have described probably had enough amount of gastric mucosa, which caused extensive ulceration with bleeding and had greater affinity for the isotope and thus had a positive scan.

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# BLUE BERRY MUFFIN BABY

## A CASE REPORT

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### ABSTRACT:

*Stage IV-S neuroblastoma (Blue Berry Muffin Baby) is a rare variety of neuroblastoma. In this report a three month old baby suffering from the disease is described.*

**KEY WORDS:** Neuroblastoma

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### INTRODUCTION

Neuroblastoma is a malignant neoplasm of infancy and childhood. The prognosis of this tumour in children depends upon age, primary site and stage at the time of presentation. The stage IV-S Neuroblastoma is a special variant which is defined as primary tumour plus disseminated tumour in liver, skin and bone marrow<sup>1</sup>. It has favourable prognosis when compared to stage IV neuroblastoma.

### CASE REPORT

A three months old female infant presented to our unit with a mass in the left lumbar region since birth and small nodules over the abdomen, vulva, chest, head and neck regions which appeared at the age of 4 weeks. On examination she was irritable, with weight and height below 10th per centile for her age, with extreme pallor, a palpable 4x7 cm firm non-tender mass with irregular margin. Multiple nodules 1-2 cm in diameter, having a bluish hue, soft to firm in consistency were present all over the body.

Her haemoglobin was 6.3 gm/dl with TLC of 11,500/cu.mm. Urine examination showed microscopic hematuria and pyuria. Renal functions were normal. Abdominal ultrasound revealed a mass in the left lumbar region. Right kidney was normal. The child had

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hydronephrosis and hydroureter. One of the skin swellings was excised. Histology report was neuroblastoma. Bone marrow examination confirmed the diagnosis, showing infiltrative lesions of neuroblastoma in bone marrow. The infant was managed with supportive measures, blood transfusion, nutritional support and counseling of parents specially for followup examination

### DISCUSSION

Management of Stage IV-S Neuroblastoma is controversial. This include resection of the primary tumour, irradiation, chemotherapy, bone-marrow transplantation and supportive care. Deborah et al<sup>2</sup> in 1992 concluded in their study of 37 patients that, resection of primary tumour is both safe and effective in children with stage IV-S Neuroblastoma. They also concluded that patients with skin metastasis at the time of presentation are good candidates for resection alone. In patients with associated hepatomegaly, leading to respiratory compromise, coagulopathy and extensive metastasis (high risk group), multiagent chemotherapy and hepatic irradiation is advised.<sup>3</sup>

We managed this case only by supportive treatment and observation because the patient was unfit for any major resection. The recommendation for treatment of children with Stage IV-S Neuroblastoma by Children Cancer Study Group is supportive care, operative intervention being diagnostic and resection of primary tumour is not mandatory<sup>4</sup>. Diagnosis of Neuroblastoma Stage IV-S

should be confirmed by MIBG Scan and Tc 99 m MDP scintigraphy<sup>5</sup>.

Prognosis of Stage IV-S Neuroblastoma in terms of survival is better than Stage III and Stage IV, but infants less than 2 months of age have favourable prognosis in comparison to older children<sup>6,7</sup>. Choi et al described this favourable prognosis due to auto-tumor host immunity in these patients<sup>8</sup>. Suarez et al published their experience of 34 cases of Stage IV-S Neuroblastoma in which spontaneous remission was observed in 25% of patients without any treatment<sup>9</sup>.

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# ADENOCARCINOMA COLON IN A CHILD- A RARE ENTITY

## A CASE REPORT

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### ABSTRACT:

*Adenocarcinoma colon and rectum is a rare tumor in early childhood. The present report is of a boy, 11 years of age who presented with diarrhoea, melena and profound anemia and was eventually diagnosed on histopathology as a case of adenocarcinoma pelvic colon.*

**KEY WORDS:** *Adenocarcinoma colon, malignancy, child*

### CASE REPORT

A male child, 11 years of age presented with diarrhoea and episodes of fresh rectal bleeding for four months. He developed progressive pallor, vomiting, anorexia, weight loss and a palpable abdominal mass. He was treated with antituberculous drugs for a period of one month with diagnosis of abdominal tuberculosis. On examination, there was an abdominal mass which was firm to hard in consistency, fixed, 8 x 6cm in size extending from suprapubic and umbilical region to the left iliac fossa. On rectal examination there was an extrarectal mass fixed to anterior wall, upper limit of which could not be reached. Hemoglobin was 4.6 gm/dl and a ESR 186 mm in the 1st hour. Biochemical profile was normal and Montoux test was negative. Ultrasound showed an irregular mass of 10x5cm involving the rectum and part of the sigmoid colon with narrowing of the lumen of the pelvic colon. The mass was also involving fundus of the bladder. Barium enema showed an irregular and narrow pelvic colon. A probable diagnosis of rhabdomyosarcoma or a lymphoma was made. At laparotomy, the tumor which involved pelvic colon, fundus of the bladder and segment of anterior abdominal wall was resected enmass. Low type of colorectal anastomosis was performed. A proximal defunctioning colostomy was established. Gross appearance of the tumor showed a cauliflower arising from the pelvic colon (Fig.1). Histopathology reported it to

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be an adenocarcinoma of colon. Lymph node biopsy revealed reactive hyperplasia. Postoperative course was uneventful. The child was well on six months followup. He has put on weight since then and has maintained hemoglobin of 12.5 gm%. He has not been given any chemotherapy and is waiting for closure of colostomy.



**Figure : 1;** Opened out segment of pelvic colon, showing cauliflower growth of adenocarcinoma. Ulcerated surface is clearly seen from where hemorrhage used to occur with repeated episodes of melena. A satellite lesion is also visible.

### DISCUSSION

Adenocarcinoma of colon and rectum are the most common cancers of the gastrointestinal tract in adults but is rare in children. In childhood tumours it is the second

most common cancer of the alimentary tract, after the liver carcinomas. Colorectal carcinoma has an incidence of 1.3-2 cases per million live births.<sup>1,2</sup> Although mean age of occurrence is 15-19 years, there is report of a 9 months old infant with colorectal carcinoma.<sup>2</sup> Colorectal carcinoma is sporadic in 75%, familial in 10-20% and genetic in 1%. With inflammatory bowel disease the incidence is 1% and in hereditary nonpolyposis disease it is 5-6%. Urinary diversions into the colon and chronic parasitic infestation may also be some of the etiological factors of the carcinoma of colon.<sup>3</sup>

Several genetic disorders carry a significant risk for the subsequent development of colon cancer and are characterized as polyposis coli syndromes. These include syndromes like Gardner's, Turcot's, Old field and familial polyposis coli. Children with Peutz-Jeghers syndrome and juvenile polyposis coli may carry 2-3% incidence of colorectal carcinoma. Patients with ulcerative colitis and Chron's disease are at 20 times greater risk of developing colorectal carcinoma than the general population.<sup>2,3</sup>

Presenting features vary, mostly constitute pain abdomen, nausea, vomiting, anorexia and change in bowel habits with alternating diarrhoea and constipation. In our patient,

predominant features were diarrhoea and melena.

Carcinoembryonic antigen is useful preoperative tumour marker but its raised values are much more important in recurrence of the disease.. Histopathologically the tumor has got two subtypes, scirrhous and mucinoscirrhous. Our patient had mucinous type of the adenocarcinoma which is rapidly progressively and has poor prognosis. Preoperative radiotherapy has been employed to create fibrosis and obliteration of lymphatics so as to prevent spread during handing of the tumour. In children, unfortunately, chemotherapy and radiotherapy have not shown any benefit in prolongation of survival .

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