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EDITOR'S NOTE

ORIGINAL ARTICLES

CASE REPORT

EDITOR'S NOTE :

Continuing Medical Education

It has been realized worldwide that a medical degree, particularly a specialist diploma, does not qualify an individual for a lifetime of work.

Such has been the rate of advance of basic science with medical breakthroughs virtually every week, that a medical degree is almost obsolete from the day of qualification. Further complexity is added by the rapidity of alteration of global biology and sociology in such areas as antibiotic resistance, toxic effluents, dietary dilemmas, spread of HIV and tuberculosis, without even considering the clinical importance of medical costs.

For this reason, developed countries have opted for a system of Continuing Medical Education (CME). A major difficulty in this approach is how to achieve this goal. Most have evolved into a voluntary system where attendance at congresses, update courses or questionnaires on selected published articles ensure that the requisite number of points for continuing registration to practice are acquired. This progress has been made despite considerable resistance, particularly amongst the older members of the medical community who rely on clinical wisdom and skills acquired after many years of experience. Unfortunately, with the advent of molecular medicine, this is no longer enough and their resistance has been broken by the threat of litigation as much as by the desire for clinical competence.

These systems are not however, without flaws. Voluntary systems do not, for instance evaluate the quality of attendance at congresses which are almost invariably held at attractive holiday resorts. Furthermore, the very people who most need continuing medical education are those who do not attend. For such reasons, the general move is inexorably towards recertification procedures every 5 to 10 years, as well as measures of clinical competence, a direction that is vociferously backed by the lay press and general public.

In the developing world, the problem is at a much earlier stage, where the issue of the day is that of unqualified practitioners and quacks with insufficient mechanisms to control them. In addition, enforcement remains a significant aggravating factor. Although the need for C.M.E. is greater in developing countries, the progress is at best embryonic and relies heavily upon formal lectures and workshops with little evidence of evaluation and recording of attendance. Some of these are sponsored by the pharmaceutical firms, the less ethical of whom may have questionable motives.

In Pakistan, this issue requires addressing urgently by the statutory body (e.g. P.M.D.C.) and the certifying body (e.g. CPSP) in order to avoid the problems the developed world has experienced in the predictably troubled years of the near future. Perhaps the solution lies in a pilot study undertaken voluntarily by a few university centres in order to demonstrate the advantages of re-certification, for retention of trust of the general public and maintenance of the image and status of the medical profession.

PETER BAILLIE

LETTER TO THE EDITOR

Dear Prof. Aziz,

I am so glad to go through the editorial "Cost effective surgery in Developing Countries" in Vol.3, No. 3, July-Sept, 1998 issue of JSP. I fully agree with your comment that we could only provide substandard medical or surgical care in an attempt to cut down the price for proper investigation and treatment. The tools for investigation (e.g. Endoscopes, C.T. MRI and immunological (tests) have become very costly, the procedures have been time consuming but effective (e.g. partial hepatectomies, transplants etc) increasing the cost for the proper surgical services. But many procedures which were thought impossible in the past have been made possible (saving many precious lives): but the cost for the benefit obtained has gone up.

This view should be shared amongst the community, who should not blame the surgeons for increasing the cost for the benefit of living in the planet following proper investigation, treatment and follow up.

With regards.

Yours sincerely
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FRACTURE STABILITY, QUALITY OF BONE AND PITFALLS IN SURGERY VERSUS COMPLICATIONS OF FIXATION IN INTER TROCHANTERIC FRACTURES

A.R. JAMALI, GHULAM MEHBOOB

ABSTRACT:

This is a retrospective study of 65 cases (mean age 58.83 ± 16.36 years) based upon radiological assessment of intertrochanteric fractures developing complications of fixation. Correlation is discussed between various complications and type of fracture, bone quality, reduction, type of instability and implant type, suitability and position. The tendency for deterioration of varus was significantly high in Evan's type 1c (68.18 %) and 1d (75 %) fractures with medial cortical deficit (78.38 %). The tendency for proximal cut out of implant was again significantly high in Evan type 1c (54.54 %) and 1d (41.66 %) fractures, varus reduction (46.62 %), medial cortical deficit (51.36 %) and suitable implants (51.62 %) in unacceptable position (50 %). The tendency of medial migration of distal fragment was high in Evan's type 1d (54.15 %) and type 2 (100 %) fractures with reverse obliquity and compression hip screw (88.33 %). Tendency for penetration of femoral head was again high in Evan's type (2) fractures (36.36 %) with reverse obliquity. Tendency for implant breakage/bending/loosening (15 cases) was high in Evan's type 1d (37.5 %) and type 2 (27.27 %) fractures, normal quality bone (52.94 %) and implant placed in acceptable position (52 %). The difference was non significant for other factors and complications of fixation.

Thus we concluded that achieving bony stability in intertrochanteric fractures is of prime importance in prevention of complication of fixation.

KEY WORDS: Fracture stability: Intertrochanteric frature

INTRODUCTION

The benefits of the Surgical treatment of trochanteric fractures are lost or greatly reduced, if early ambulation is not achieved[26]. The effects of subsequent mortality, morbidity and trauma of revision surgery are enormous. Over the time our understanding of behavior of these fractures in respect of stability,[1,2,4,11,19,26] quality of bone [1,3,7,9,19,20,28,29] and quality of reduction and fixation[7,8,16,19,40] has improved. Since Frankel[11,17] proved that 75% of load is taken by the bone if two main fragments are in stable contact, attempts have been made to achieve this by variety of methods including anatomic reduction,[3,16,19,26] interfragmentary fixation,[7,25] medial displacement osteotomy[1,2,10] or valgus osteotomy[27]. To overcome the bending and shear forces and compensate for settling and collapse of the fracture,[1,7,8,9,24] valgus reduction and fixation with sliding compression [6,12,14,18,22,25,31] screw is preferred. However other implants are also used[1,6,8,16,26,30]. Many studies have been conducted to analyze the biomechanical properties [8,11,12,13,14,15,18,22,23] of these implants. Majority of these work under tension band principle[11,24]. Inspite of all these improvements, complications of fixation do appear and correlate with basic fracture geometry, quality of bone, bony stability achieved during surgery and quality of fixation[8].

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PURPOSE OF STUDY

This study was conducted to analyse the factors leading to complications of fixation in intertrochanteric fractures and establish their relationship if any.

MATERIAL AND METHODS

This is a retrospective study conducted at Jinnah Post-graduate Medical Centre, Karachi and is based upon the radiological assessment of pre-operative and post-operative films of trochanteric fracture operated during a three year period, from January, 1993 to December, 1995 which eventually developed some complication of fixation. The sample comprised of sixtyfive cases with followup ranging from the first post-operative day upto 18 months depending upon when the complication of fixation was detected. There were fortysix (70.77%) male and nineteen (29.33 %) female patients with a mean age of 58.83 (±16.36) years.

This study was divided into four subgroups:-

a) Pre-operative assessment of
- Fracture stability based upon Evans[4] and Sarmientos[26] concepts and
- Quality of bone based upon Singhs[29] grading. Singhs grade 1,2,3 were considered osteoporotic and 4,5,6, being normal.

b) Technical pitfalls including selection of patients and operative errors:
- Poor selection of cases where it was difficult to achieve bony stability.
- Failure to achieve bony stability, though theoretically possible.
- Causes of instability including poor reduction (defined as varus 130°, Valgus > 155° rotation > 10°, non apposition or overlap of medial cortex), loss of medial/posterior cortex and reverse obliquity.
- Poor quality of fixation including use of inappropriate implant and poor position of nail in femoral neck (the acceptable position being nail in central or inferior part of neck and tip lying near the convergence of principle compression and traction trabeculae)

c) Complications of fixation:
- Loss of position defined as deterioration in position of fracture of >10° varus, or any measurable rotation or migration of distal fragment medially for more than single cortex thickness.
- Implant Problems including cutout, medial penetration, loosening, breakage or bending of implant.

d) Assess the relationship between these factors and specific complication of fixation.

The data was analyzed on EPI-INFO VERSION SIX with CHI SQUARE test when the expected value was more than five and Yates correction of CHI SQUARE test if the expected value was less than five. P Value of less than 0.05 was considered significant and conclusions were drawn.

RESULTS

(As shown in Table-I on page 7)

Eight (12.30%) fractures were stable (Evans 1b) and fifty-seven (87.70%) were unstable (P-value 0.001) including twentytwo(33.85%) cases of Evans type 1c, twentyfour (36.92%) cases of type 1d and eleven (16.93%) cases of type 2.

Singhs grade 1,2,3, were considered osteoporotic and fortyeight (73.85%) cases came into this category. Remaining seventeen (26.15%) cases belonged to Singhs grade 4,5,6. (P-value 0.001). On further trabecular grading nine (13.85%) were in grade I, eighteen (27.69%) in grade II, twentyone(32.30%) in grade III, eleven (16.92%) in grade IV, two (3.07%) in grade V and four (6.15%) in grade VI (P-value 0.001).

The decision to operate nineteen (29.33%) cases was questionable as it was difficult to achieve bony stability in these cases as compared to fortysix(71.77%) other cases which were stable or could have been stabilized (P-value 0.001).

In thirtyeight (58.46%) fractures, it was theoretically possible to achieve bony stability by either anatomic reduction (18 cases) or by non anatomic methods (20 cases). However this was not achieved, (P- value 0.05).

Out of these sixtyfive fractures fortytwo (64.61%) were reduced and fixed in varus position as compared to two (3.07%) in valgus position, twentyone (32.30%) were considered as no varus or valgus (130o-155o). (P-value 0.001). Thirtyseven (53.96%) cases had medial cortical deficit and twentyfour (36.92%) had posterior cortical deficit usually in combination with medial deficit (P value 0.002). There were eleven (16.93%) cases with reverse obliquity as compared to fiftyone (78.46%) without reverse obliquity. (P-value 0.001)

The implants used in these 65 cases were Jewett nail plate thirtyeight (58.46%) cases, compression hip screw eighteen (27.70%) cases and others nine (12.84%). We commonly use 135o Jewett nail plate, followed by compression hip screw. Other implants are rarely used. Five (7.69%) implants were unsuitable because of insufficient mechanical strength. Fourteen (21.53%) had short nail (at least twenty mm away from subchondral bone) and three (4.61%) had longer nail (with in ten mm of subchondral bone). (P-value 0.001).

In forty (61.53%) fractures, the screw or nail was placed in less ideal position in femoral neck as compared to twentyfour (38.47%) placed in relatively ideal position. (P-value 0.01).

Post-operatively thirtyfive (53.84%) fractures had deterioration of varus deformity with fourteen (21.53%) showing increased rotation, twentyseven (41.53%) showed medial migration of distal fragment and there were ten (15.38%) nonunion. (P-value 0.001).

Implant cut out proximally in twentyfour (36.92%) cases and anteriorly or posteriorly in Seven (10.76%) cases. In ten (15.38%) cases the implant penetrated the femoral head. There were fifteen (26.07%) cases of implant bending/breakage or loosening. (P-value 0.001).

As observed in earlier paragraphs, following are the important complications of fixation (1) Deterioration of varus thirtyfive (53.84%) cases (2) Implant cutout proximally twentyfour (36.92%) cases (3) medial migration of distal fragment twentyseven (41.53%) cases (4) Implant penetration of femoral head ten (15.38%) cases and (5) Implant breaking/bending/loosening fifteen (26.07%) cases. It is not possible to pin point a single factor as a cause of any particular complication of fixation as most cases had multiple factors operating simultaneously. However certain observations are made on the basis of positive or negative association.

Unstable Evans type 1c and 1d fractures had high tendency (68.18% and 75% respectively) to go into varus. Bone quality did not influence the tendency to deterioration of varus. Fracture reduced in varus and no varus or valgus position had similar tendency to go into varus (54.17% & 52.94% respectively, non significant). Fractures with medial cortical deficit predisposed to varus in significantly higher percentage of cases (78.38% cases). No significant difference was seen with type of implant and quality of fixation.

This complication was observed usually in association with deterioration of varus. Again unstable Evans type 1c and Id fractures had high tendency (54.54% & 41.66% respectively). No significant difference was seen between osteoporotic and normal bone. Fracture reduced in varus had higher tendency (47.62%) for implant cut out proximally as compared to fracture reduced in no varus or valgus (19.04%) or valgus position. Fractures with medial cortical deficit had implant cut out in 51.36% cases. Fractures fixed with compression hip screw had slightly higher tendency to cutout proximally however the difference is not significant. Fractures fixed with acceptable implants but in poor position showed significantly higher tendency to cut out proximally.

All of the Evans type 2 fractures and 54.15% of Evans type Id fractures showed this complication. Bone quality did not significantly influence the rate of medial migration of distal fragment. Fractures reduced in varus or no varus/valgus did not differ significantly. Fractures with reverse obliquity or those fixed with compression hip screw showed very high tendency (100% & 88.33% respectively) for medial migration of distal fragment.

Unstable Evans type 1d and type-2 showed higher tendency for this complication but the difference is non significant. No significant difference was seen with the quality of bone or reduction. Fractures with reverse obliquity did show higher tendency (36.36%) for this complication (P-value 0.06). Fractures fixed with JNP showed this complication in 21.05% cases as compared to 5.55% of cases fixed with compression hip screw (statistically non significant).

Evans type Id fractures showed higher tendency (37.5%) for this complication followed by Evans type-2 (27.27%) fractures (p-value 0.05) Implant bending/breaking/loosening was observed more frequently in normal/relatively normal bone (52.92%) as compared to osteoporotic bone (12.50%) which is significant (P-value 0.001). Position of reduction did not influence much, however fractures with medial cortical deficit or reverse obliquity showed slightly higher tendency (37.03% and 27.27% respectively), the difference is non significant. Jewett nail Plate also showed high failure rate (26.31%) as compared to compression hip screw (11.11%). However other implants used had a higher tendency to break (33.33%), the difference is non significant. Significant (52%) breakage/bending/loosening was observed in fractures fixed with nail in a good position (P-value 0.001)

DISCUSSION:

The effectiveness of fixation in intertrochanteric fractures depends upon the stability of fracture, quality of bone and quality of reduction and fixation. 8 However the relationship of these factors with complications of fixation is very complex and depends upon their interaction as well as some other factors, It is almost impossible to find an ideal situation with a single factor causing a specific complication, as in reality each case is different from the other. However some of these factors are under surgeons' control, such as selection of cases, ability to achieve bony stability, quality of reduction and fixation, which can be improved upon[19].

The incidence of complications of fixation in stable fractures ranges from 3% [11] to 13%,[19] which is much lower than seen in unstable fractures which ranges from 25%[19] to 51%.[2] Our figures show the same pattern. We do agree with Dimon & Houston[1,2] ,Harrington[9] and Sarmiento[27] that it is the basic instability of the fracture that leads to the complications of fixation and in its presence the tension band[11,24] principle of fixation will not work. Other factors usually contribute. However the type of instability does

seem to have some relationship with specific complications of fixation, as we noted that Evans type 1c fractures with medial instability tend to go into varus with implant cut out proximally. Evans type Id fractures with most components of instability had high tendency to show almost all types of complication. Evans type (2) fracture showed higher tendency for medial migration of distal fragment with occasional penetration of femoral head or loosening of screws.

If these unstable fractures can be converted to stable fractures, the rate of complications drastically reduces. Dimon & Houston[1,2] reported 5% complications in unstable fracture, if bony stability was achieved operatively. Hunter[10] and Laros[19] however failed to reduce the complication rate with medial displacement osteotomy of Dimon & Houston. Unfortunately stability was not achieved in significant number of our cases. Some of these cases were difficult to stabilize, thus the question to operate them or not is arguable. We are of the firm belief that the instability is basic cause of failure and achieving bony stability is the key to success in trochanteric fracture surgery.

The role of osteoporosis as a predisposing factor to the complications of fixation is difficult to solve as most of the intertrochanteric fractures occur in osteoporotic bone. However osteoporosis does render fixation very tenuous, which depends more on bony stability than on the type of implant. Our complications of fixation according to Singhs trabecular grading are the same as reported by Laros[19]. However implant breaking or bending or loosening was observed more in fractures in normal/relatively normal (Singhs grade 4,5,6) bones as compared to osteoporotic bone.

Quality of reduction[16,26] was considered a good predictor for patients recovery for walking ability, however anatomic reduction does not restore stability[1,2,19,26] nor it prevents complications of fixation Main causes of failure are poor reduction and instability.8 Varus reduction[3,4,7,19,20,26] is considered to be a significant factor leading to complications of fixation.

Valgus position[7,9,24] is favored by many as it helps to overcome bending and shear forces as well compensate for settling and collapse of the fracture. However Harper[8] warns against excessive valgus as it may open up the fracture. Similarly Harrington[9] also points to loss of bone contact on medial side with valgus reduction. This was the case in both of our cases with valgus reduction as they opened up with non opposition of cortex on medial side. We have not seen much difference in tendency to show complications of fixation between varus and no varus or valgus position, However more cases with varus reduction showed complications of fixation as compared to no varus/valgus & Valgus reduction.

Effects of instability due to medial cortical deficit with or without posterior deficit are more or less same as those observed with Evan's type 1c & 1d fractures, while those with reverse obliquity were the same as seen with Evans type-2 fracture. Our figures support this.

Compression hip screw with side plate, Jewett nail plate and Enders pins are commonly used implants for fixation[1,2,3,6,8,9,14,17,19,27,30,31] of these fractures. Compression screw with side plate is being preferred by most surgeons because of its sliding characteristic which compensates for the collapse and settling of fracture. However it does not offer any superiority to JNP in encountering varus or rotation[22]. We commonly use Jewett nail plate and compression hip screw. We have not observed significant difference between two in preventing varus deterioration, however Jewett nail plate penetrated femoral head or broke/bent/loosened in slightly high percentage of cases as compared to compression screw (statistically non significant), which on the contrary allowed medial migration of distal fragment without penetration of femoral head in significant percentage of cases. Compression hip screw also cut out in slightly higher percentage of cases as compared to jewett nail plate. Other implants unsuitable for intertrochanteric fractures however broke more often.

Length of the nail/screw and its position in femoral neck has some relationship to the complications[6,19] of fixation. Laros 19 noted that if the nail tip is placed less than Ten mm from subchondral bone, it is likely to penetrate into the acetabulum. In all our three cases with nail tip less than Ten mm from subchondral bone, penetration of femoral head did occur. However with shorter nails the situation is less clear. In our series nails placed in less ideal position in femoral neck more often cut out. The implant breakage/bending/loosening occurred more often when the nail was placed in a good position.

SUMMARY

Most of our complications can be attributed to surgical errors. The common complications observed were deterioration in varus, proximal cut out of implant, medial migration of distal fragment, penetration of femoral head and implant breakage/bending/loosening. Majority of these complications occurred in unstable fractures in osteoporotic bones, with varus reduction and fixed with acceptable implants but in poor position. However it has to be noted that these fractures usually occur in osteoporotic bone and are fixed with acceptable implants in most cases, so their significance is questionable.

The correlation of various factors with complications of fixation is complex, but certain trends are very obvious.

1. Evans type 1c and 1d had significantly higher tenden-

cy to varus deterioration and implant cut out proximally, Type 1d fracture also show higher tendency for medial migration of distal fragment and implant breakage/bending/loosening. Type 2 fractures had highest tendency for medial migration of distal fragment.

2. Tendency for implant breakage/bending was higher in normal bone.
3. Varus or no varus/valgus reduction showed no difference in tendency to varus deterioration, however varus had higher tendency for implant cut out proximally.
4. Medial and posterior cortical deficit had high tendency to show varus with implant cut out proximally, and reverse obliquity was associated with medial migration of distal fragment and penetration of femoral head.
5. No significant difference was observed between various implants except compression hip screw had higher tendency to allow medial migration of distal fragment.
6. Acceptable implants placed in poor position had higher tendency to cut out proximally. The tendency for implant to break/bend/loosen was more when it was placed in normal position.

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TABLE-I **CORRELATION OF FRACTURE TYPE, BONE QUALITY, REDUCTION, TYPE OF INSTABILITY, TYPE OF IMPLANT, SUITABILITY AND POSITION WITH COMPLICATIONS OF FIXATION**

FRACTURE TYPE	Deterioration of Varus (n=35)	Proximal cut-out of implant (n=24)	Medial Migration of Distal Fragment (n=27)	Penetration of Femoral Head (n=10)	Breaking/ Bending of Implant (n=15)
Evan's Type 1a, 1b (n=8)	2 (25 %)	1 (12.5 %)	3 (37.5 %)	1 (12.50 %)	1 (12.5 %)
Evan's Type 1c (n=22)	15 (68.18 %)	12 (54.54 %)	--	--	1 (4.54 %)
Evan's Type 1d (n=24)	18 (75 %)	10 (41.66 %)	13 (54.15 %)	5 (20.83 %)	9 37.5 %)
Evan's Type 2 (n=11)	--	1 (9.09 %)	11 (100 %)	4 (36.36 %)	3 27.27 %)
P Value	0.03	0.031	0.01	0.43	0.05
BONE QUALITY					
Osteoporotic Bone (n=48)	26 (54.17 %)	18 (37.5 %)	18 (37.5 %)	7 (14.58 %)	6 (12.5 %)
Normal Bone (n=17)	9 (52.94 %)	6 (37.29 %)	9 (52.94 %)	3 (17.64 %)	9 (52.94 %)
P Value	0.9	0.8	0.27	0.8	0.001
REDUCTION					
Varus reduction (n=42)	24 (57.14 %)	20 (46.62 %)	15 (37.71 %)*	5 (11.9 %)	8 (19.04 %)
No varus/valgus (n=21)	11 (52.38 %)	4 (19.04 %)	10 (42.69 %)*	5 (23.8 %)	7 (33.33 %)
Valgus (n=2)	--	--	2 (100 %)	--	--
P Value	0.71	0.03	0.0469*	0.3	0.209
TYPE OF INSTABILITY					
Medial* cortical deficit (n=37)	29 (78.38 %)	19 (51.36 %)	11 (29.72 %)	5 (13.51 %)	10 (37.03 %)
Posterior* deficit (n=24)	13 (54.17 %)	6 (25 %)	7 (21.17 %)	2 (8.33 %)	4 (16.66 %)
Reverse obliquity (n=11)	1 (9.1 %)	1 (9.1 %)	11 (100 %)	4 (36.36 %)	3 (27.27 %)
P Value	0.001	0.01	0.001	0.06	0.2
'*Usually in combination					
TYPE OF IMPLANT					
Jewett Nail Plate (n=38)	19 (50 %)	12 (31.58 %)	10 (26.32 %)	8 (21.05 %)	10 (26.31 %)
Compression Hip screw (n=18)	11 (61.11 %)	10 (55.55 %)	15 (88.33 %)	1 (5.55 %)	2 (11.11 %)
Others (n=9)	5 (55.55 %)	2 (22.22 %)	2 (22.22 %)	1 (11.11 %)	3 (33.33 %)
P Value	0.7	0.13	0.001	0.301	0.331
SUITABILITY OF IMPLANT					
Acceptable Implant Choice (n=43)	23 (53.49 %)	22 (51.62 %)	20 (46.51 %)	7 (16.28 %)	13 (30.23 %)
Poor Implant Choice (n=22)	12 (54.54 %)	2 (9.09 %)	7 (31.82 %)	3 (13.64 %)	2 (9.09 %)
P Value	0.9	0.001	0.23	0.85	0.09
POSITION OF IMPLANT IN FEMORAL NECK					
Poor Position of Implant (n=40)	21 (52.90 %)	20 (50 %)	15 (37.50 %)	6 (15 %)	2 (5 %)
Good Position of Implant (n=25)	14 (56 %)	4 (16 %)	12 (48 %)	4 (16 %)	13 (52 %)
P Value	0.78	0.005	0.4	0.84	0.001

CHANGING TRENDS IN HYPERTROPHIC PYLORIC STENOSIS

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ABSTRACT:
A three year study on Hypertrophic Pyloric Stenosis, (HPS) was conducted at the Department of Paediatric Surgery, Nishtar Hospital, Multan. Many features of HPS in published literature were not found in our study. There was male predominance, male to female ratio was 9:1. It was seem more frequently among babies of multigravida and 90% had gestation period of more than 35 weeks. Vomiting started within first week of life in all the infants. Weight of 50% patients was within normal limits. There were no gross associated anomalies, though peroperative malrotation was found in only 7.14% patients. Moderate to severe dehydration was noticed in 21.42% and hypokalaemia in 10.7% patients. Ultrasonography was diagnostic in 29.6% cases.

KEY WORDS: Hypertrophic Pyloric stenosis, Neonates, Vomiting

INTRODUCTION:
After inguinal hernia, Hypertrophic Pyloric Stenosis is the most common disorder in neonates, which needs surgery. The first case of pyloric tumour in infants was noted by Patrick Blair in 1717. Beardsly reported it in 1788 in a boy of five years in the U.S.A. German physician Hildanus described symptoms and physical signs in 1646. Hirschsprung, a Dutch Paediatrician, gave detailed information in 1877 about its anatomy, pathology and clinical features. Many variations from Western studies are observed while managing these patients at Nishtar Hospital, Multan. This study was conducted to analyse these factors in our patients.

PATIENTS AND METHODS:
Record of twentyeight HPS patients admitted in the Department of Paediatric Surgery, Nishtar Hospital, Multan, between April 1994 and April 1997, were reviewed. Information was entered in a predesigned proforma which included history of patient, family and gestation. Patients were examined thoroughly for associated anomalies, relevant investigations were done. Similarly during surgery abdominal viscera were examined for associated anomalies. Results were analysed for possible clues toward aetiology and differences with Western literature were reviewed

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RESULTS:
Between April 1994 and April 1997, 872 neonates were admitted in the Department of Paediatric Surgery, Nishtar Hospital, Multan. Hypertrophic Pyloric stenosis was diagnosed in 28. Twentyfive (89.28%) patients were male and 03 (10.72%) female .

Ages of patients at the time of admission and at time of onset of vomiting are given in Table I. Most of them (42.85%) presented between 16-21 days. 82.13% of the mothers were between 20-40 years of age. Parents of 46.42% patients were non- relatives, 28.57% consangious relatives and 25% far relatives. History of Pyloric stenosis in parents and family was not present. Seven patients were born to primigravida. Gestational history is shown in Table No. II. 92.83% had a gestation period more than 35 weeks. 46.42% mothers had infections. Weight of 25% infants was more than 3 kg. 25% were of 3kg and 50% less than 3kg. Moderate to severe dehydration was seen in 21.42% infants, hypokalaemia was observed only in 10.7% infants. During surgery malrota-

TABLE-I Age of patients at presentation

No.	Age of Patients	No. of Patients	Percentage
1.	0-7 days	03	10.7
2.	8-15 days	07	25.0
3.	16-21 days	12	42.85
4.	22-30 days	06	21.42

TABLE-II	Gestational history of mother		
No.	Gestation History	No. of Patients	Percentage
1.	Gestation period < 35 weeks	02	07.14
2.	Gestation period > 35 weeks	26	92.83
3.	Spontaneous vaginal delivery	24	85.71
4.	Assisted delivery	04	14.28
5.	Polyhydramnios	05	17.85
6.	Infections	13	46.42
7.	Severe anxiety	06	21.42
8.	Drugs used	02	07.14

tion was seen in 7.14% infants. Ultrsonography was diagnostic in only 29.6% of patients.

DISCUSSION

The incidence of HPS is difficult to determine as it varies with geographical locations, time and race. Incidence ranges widely from one to four per 1000 live births in various countries[1]. Incidence in total population is 0.5%, while incidence among neonates is 3-4/1000 live births[2]. Highest, (8.8/1000 live births) is reported from Scotland. Incidence also varies from time to time. It has increased in Germany by 2.72 per 1000 live births for the last ten years. In Britain it increased from 1.5/1000 live births to 3/1000 live births[3].

Generally male to female ratios is 4:1[4]. Earliest reported age of onset of vomiting is four days[5] while it occurs as late as five months[6]. Premature babies vomit at late age[7]. All of our attendants gave history of vomiting since birth after repeated inquiries. 82.13% mothers were between 20 to 40 years of age, 75% were multipara. This is a common range of age of fertile mothers in our country. One possible explanation is hormonal imbalances in mothers as a cause, because disease is more in advancing ages of mother and among male infants(9:1).

Only 25% of our patients were first babies. It is reported that 50% patients are first male babies of the family[8]. Reyna found low incidence of 0.43% in first male baby. He also found low percentage among first born female child[9]. 55% parents of our patients were not relatives and had no previous family history of HPS. However it is reported that the incidence is 15 times higher among HPS parents[10]. It was reported that 6.7% siblings of HPS parents and 4.5% relatives were sufferers. Transmission from mother, who had pyloric stenosis in her infancy, is 25%, more than father having similar problem. Berhaman reports that 25% siblings of a HPS mother gets the same disease. Christopher reports 10% sons and 2.5% daughters of such mothers show pyloric tumour[2].

We have observed that our patients present at earlier ages and are within good range of weight for age. Hypertrophic pyloric stenosis is reported higher in gestation period more than 35 weeks and high birth weight[11]. We received patients referred from Paediatricians and they were less dehydrated (21.42%) and less kypokalaemic (10.7%) then reported in litrature. In-Britain 63% such infants are found kypokalaemic[12].

Associated anomalies are few in our patients. These are 6-12% in various studies[13]. Hypertrophy of whole gut is reported in four patients[8]. Most common association is seen with hiatus hernia and lax oesophagus. Other association are seen with mediastinal neuroblastoma and tracheoesophageal fistula. Association with common paediatric problems like inguinal hernia and hypospadias etc. are occasional[14].

CONCLUSION:-

Trends of HPS are different in our study viz:

- Hypertrophic pyloric stenosis is less common in our region.
- Vomiting commonly starts at an earlier age, mostly during the first week of life.
- Weight loss, dehydration and hypokalaemia are not hallmarks of pyloric stenosis in our cases.
- Ultrasonography has a little role in diagnosis of HPS at our hospital.

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SURGICAL COMPLICATIONS OF TYPHOID FEVER

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ABSTRACT:
This is a prospective study, carried out in the Department of Paediatric Surgery, Chandka Medical College Hospital, Larkana from January 1993 to December, 1997. A total of 90 cases of typhoid fever with surgical complications were admitted in the unit. Of 90 patients, 88 had gut and 2 had gall bladder perforations. In majority of patients (61.2%), duration of fever was two or more weeks. Leucopenia was found in 33.3% and pneumoperitoneum in 72.2%; Widal test was positive in 33.3% and blood culture, though done in 40 patients, were positive in all. Laparotomy was done in 89 patients. In 70 patients single and in 17 patients, multiple ileal perforations were present. Surgical procedures performed were: simple double layer closure (80), resection and anastomosis (5), hemicolectomy (2), and cholecystecstomy (2). Postoperative complications occurred in 36 patients (44.4%); wound infection being the most common complication (38.2%) in our series. Average hospital stay was 14.2 days. Seven patients (7.7%) died, one preoperatively and six postoperatively.

KEY WORDS: Typhoid fever, Ileal perforation, Gall bladder perforation.

INTRODUCTION:

Typhoid fever is a public health problem in the developing world[1]. It is still endemic in Pakistan. 53 million cases and 5 hundred thousand deaths occur throughout the world. In the developing countries, the mortality rate is 540/100,000 cases of typhoid[2]. There are many surgical complications of typhoid fever but gut perforation remains its major surgical complication associated with high mortality rate. These cases are much neglected as far as their diagnosis and correct treatment is concerned.

PURPOSE OF STUDY:

The purpose of this study was to collect data about surgical complications of typhoid fever, the age group most commonly affected, the results of its surgical treatment, complications, mortality and morbidity.

PATIENTS AND METHODS:

This is a prospective study undertaken in the Department of Paediatric Surgery, Chandka Medical College Hospital, Larkana, from January 1993 to December, 1997. A total of 90 cases of typhoid fever with surgical complications were admitted in the unit during this period. A proforma was designed to collect information of patient demographics, history, type of surgery, site, number and size of perforations, antibiotics used, hospital stay and postoperative complications. All the patients were admitted from emergency ward. All patients were prepared for laparotomy, which was carried out in 89 patients. Following investigations were done in all patients: blood CP, urine D/R, serum electrolytes, X-ray abdomen, X-ray chest, Widal test and histopathological examination of tissue of perforated wall of intestine. Blood culture was done in 40 patients.

Out of 90 patients 62 (68.8%), were males, while one-third (31.2%) were females. The most common age group affected was between 5 to 10 years (Table I).

TABLE-I

AGE	NUMBER OF PATIENTS
Under 5 years	10 (11.1%)
05 to 10 years	49 (54.4%)
10 to 15 years	31 (34.4%)

RESULTS:

Surgical complications seen were gut perforation in 88 (97.8%) and gall bladder perforation in 2 cases (2.2%).

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The presenting complaints of the patients were fever, pain abdomen, constipation, vomiting, dehydration and distension of abdomen. The duration of fever at the time of presentation is shown in Table II.

TABLE-II

DURATION OF FEVER AT THE TIME OF PRESENTATION	NUMBER OF PATIENTS
Less than a week	07 (8.7%)
One week	24 (30%)
Two weeks	39 (48.7%)
Three weeks	06 (7.5%)
Four weeks	04 (5%)

On physical examination patients were toxic, dehydrated, there was central abdominal distension with tenderness, bowel sounds were absent in majority of patients. The results of investigations are shown in Table III

TABLE-III

RESULT OF INVESTIGATION	NO OF PATIENTS
Leucopenia	30 (33.3%)
Gas under diaphragm	65 (72.2%)
Widal test positive	30 (33.3%)
Blood culture positive where done	All 40

After resuscitation with I/V fluids, nasogastric decompression, I/V antibiotics, laparotomy was done in 89 cases, with a preoperative peritoneal drain in 2 cases (who had huge distension of abdomen and were not fit for anaesthesia). Single ileal perforation was found in 70 cases (78.6%), multiple ileal perforations were found in 17 cases (19%) and gall bladder perforation was seen in 2 cases (2.2%). Keeping in view of the size of perforation, the number of perforations, the extent of inflammation of the intestine and the overall clinical condition of the patient, the surgical procedures carried out were: simple double layer repair (80), resection and anastomosis (5), hemicolectomy (2) and cholecystectomy (2).

All patients were on some kind of antibiotic before admission. However we used either of our two regimens that is either a combination of chloramphenicol, aminoglycoside and metronidazole or Ceftriaxone and metronidazole.

Of the 89 operated cases, complications occurred in 36 (40.4%). The most common being wound infection.(Table -IV)

Seven patients died (7.7%); one preoperatively and six postoperatively. The cause of death in 4 was septicaemia and in 3 faecal fistula. Four cases of wound dehiscence

TABLE-IV

COMPLICATIONS	NUMBER OF PATIENTS
Wound infection	34 (38.2%)
Wound dehiscence	04 (4.4%)
Faecal fistula	04 (4.4%)
Incisional hernia	04 (4.4%)
Residual abscess (Subdiphragmatic)	01 (1.1%)

required secondary suturing. A single case of residual abscess (subdiaphragmatic) required drainage under ultrasound guidance. Out of 4 cases of faecal fistula, 2 required reoperation while 2 closed spontaneously. Four cases of incisional hernia are being regularly followed up in our out-patient department. Average hospital stay of patients was 14.2 days.

DISCUSSION

Typhoid fever is still a very common disease in Pakistan. Its diagnosis is often delayed. Multi-drug resistance[3,4] in typhoid fever may be another factor in emergence of increased number of its surgical complications. Gut perforation remains the major complication of typhoid fever, with a high mortality and morbidity. The diagnostic criteria in typhoid ileal perforation has been bacteriological, serological, anatomo-pathological and surgical[5].

Many prognostic factors are considered in the management of typhoid ileal perforation, like fever, period before surgery, serology, size of perforation, type of surgery[6], extremes of age, generalized peritonitis, low white cell count, increased number of perforations, postoperative entero-cutaneous fistula[7], length of history, low intestinal haemorrhage, type of peritoneal fluid and blood urea level[8]. Even though most surgeons agree that elimination of peritoneal soilage and endotoxaemia, by surgery offers best hope of survival, the extent of surgery remains controversial[1]. Simple closure (one layered or double layered) with or without debridement of the edge of perforation, wedge resection and anastomosis, segmental resection and anastomosis, ileostomy with or without intestinal resection or simple peritoneal drainage; all these surgical methods are being practised by various surgeons.

In one series[9], eosinophilia was noticed in 75% of cases and pneumoperitoneum in 70% of cases; in majority of cases perforation occurred in first week of fever. There is significantly better prognosis if the perforation occurs in the first week of fever[6]. However late perforation was not associated with higher case fatality[9]. Longer the time interval between perforation and surgery, the worse is the prognosis[6]. Patients with a negative Widal result and high 'H' antigen titre, are more likely to survive. Resection and end to end anastomosis give best prognosis, next is simple closure; drainage of peritoneum and ileostomy, to be

carried out in severe cases only, are said to be ineffective[6]. Double layer closure of the perforation is said to lower the mortality rate compared with single layer closure[7]. Broad spectrum antibiotics like of chloramphenicol with gentamicin or metronidazole, or both, have reduced the mortality rate compared with chloramphenicol alone[7].

In our study, complication rate was high in patients presenting late, patients with toxaemia, dehydration and multiple perforation and in those where surgery was delayed. In majority of our patients (61.2%) fever was of two weeks or more duration, which badly affected overall prognosis of these patients. Leucopenia was present only in 33.3% of the cases, therefore it can not be relied upon as a diagnostic or prognostic factor. Pneumoperitoneum was found in 72.2% of the cases, which is in conformity with other studies[9]. Blood culture, though done in 40 cases, was positive in all. It also showed resistance to chloramphenicol in 30% of the cases. Histopathological examination of the perforated wall of ileum showed epitheloid macrophages in majority of cases. Two cases of typhoid gall bladder perforation responded well after cholecystectomy. There was no postoperative prolonged paralytic ileus and significant wound infection postoperatively. Residual abscess developed in only one case, in which peritoneal toilet was not done. Faecal fistula developed in cases where general clinical condition of the patient was not good, presented late, hypoproteinaemic and anaemic.

Mortality rate in typhoid perforation, as reported in many studies, ranges between 8 to 57%[5,7,8] while our rate was 7.7%. We recommend that patients of typhoid perforation must be referred early to tertiary care hospitals, where early diagnosis, aggressive resuscitation and prompt surgery should be carried out for decreasing the morbidity and mortality of typhoid ileal perforation. Improved survival from typhoid perforation is possible with simple, low cost measures.

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OPEN TECHNIQUE OF LAPAROSCOPIC PROCEDURES

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ABSTRACT:
From December 1994 to May 1998, 274 laparoscopic procedures were done at B.V. Hospital, Bahawalpur. Out of these, 231 patients underwent laparoscopic cholecystectomy. Seventeen procedures were for intra-abdominal lymphadenopathy and lymph node biopsies were taken. Thirteen patients underwent bilateral ovarian drilling for polycystic ovarian disease, 9 patients had laparoscopy for undiagnosed pain abdomen and in 4 patients liver abscesses were drained laparoscopically.

In all these patients, instead of using Veress needle, open laparoscopy was done and pneumo-peritoneum was induced using Hasson's Cannula. Not a single case of vascular or visceral injury was encountered. It is suggested that open laparoscopic technique should be used routinely in all laparoscopic procedures.

KEY WORDS: Laparoscopic surgery, Pneumoperitoneum technique.

INTRODUCTION:

Video assisted laparoscopic surgery is a rapidly progressing surgical speciality. It is almost replacing some of the open procedures, like cholecystectomy in many centres. In fact, it is the most important recent advancement in the field of surgery. It is rapidly becoming the first choice for almost all gall stone diseases[1,2], even for acute cholecystitis[3,4,5]. Apart from gall bladder surgery, an ever-increasing number of procedures like herniorrhaphy[6], Nissen fundo-plication, colonic resections, lymph node dissections, adrenalectomy and many other diagnostic and therapeutic procedures are being performed laparoscopically[6].

The classical method to induce pneumo-peritoneum before the actual procedure is with Veress needle, which was developed in 1938[7,8]. This instrument is spring-loaded and is usually safe. Most surgeons in Pakistan use the closed technique for pneumoperitonium with Veress needle, but there is always a chance of visceral and vascular injury as it is introduced blindly. This potential risk of visceral and/or vascular injury has been well documented in various studies[9,10]. We prefer an alternative technique of creation of pneumo-peritoneum as a routine, which was first described by Hasson[13]. It is an open technique in which Hasson's Cannula is inserted as a first port through an infra umbilical incision under vision. This technique completely abolishes the chance of visceral or vascular injury.

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PATIENTS AND METHODS:

From December 1994 to May 1998, the author has performed 274 video assisted laparoscopic procedures at B.V. Hospital, Bahawalpur. In all these procedures, instead of using Veress needle, an open laparoscopy was done and pneumo-peritoneum was induced using Hasson's Cannula. The operation notes and post-operative records of all these patients were evaluated for any complications related with induction of pneumo-peritoneum.

TECHNIQUE:

The umbilicus is thoroughly cleaned before operation with an antiseptic solution. A large size forceps is pushed in the umbilicus and is opened widely in order to put the lower wall of umbilicus under stretch. One cm vertical incision is made in the umbilicus over the stretched lower wall. Skin, subcutaneous tissue and linea alba are incised under vision to expose the peritoneum. Each side of cut linea alba is held with stay sutures using No : 1 silk. Peritoneum, is opened under vision. Hasson's Canula is introduced through the hole. An "olive" which fits in the hole

and prevents any leakage of the gas guards the lower end of the instrument. The two stay sutures are tied with the knobs on both sides of the cannula.

RESULTS:

Out of 274 patients undergoing video assisted laparoscopic procedures from December 1994 to May 1998, 231 patients underwent laparoscopic cholecystectomy. Seventeen procedures were for intra-abdominal lymphadenopathy and lymph node biopsies were taken. Thirteen patients underwent bilateral ovarian drilling for polycystic ovarian disease, 9 patients had laparoscopy for undiagnosed pain abdomen and in 4 patients liver abscesses were drained laparoscopically.

Out of the total patients 242 were female and 32 male. Twenty-eight (10.2%) patients had previous abdominal surgery, 17 through lower midline/transverse incisions and 9 had upper paramedian or midline incisions whereas two patients had appendectomies through grid iron incision. We did not encounter any injury to intra-abdominal viscera or bleeding from mesenteric vessels due to trocar injury. Seventyseven (28%) patients showed small paraumbilical hernias, which were repaired at the end of the operations.

DISCUSSION

First report of laparoscopic cholecystectomy was presented almost a decade ago by Muhe[11]. Since then this procedure has rapidly gained popularity and is replacing the conventional open cholecystectomy. Studies on thousands of patients are now available to get meaningful results. Apart from laparoscopic cholecystectomy, a wide variety of general surgical and gynaecological procedures are being performed laparoscopically. This new technique is associated with a different set of complications. Injuries during the introduction of Veress needle; the first trocar are one of those.

We analyzed the results of major studies presented in literature with reference to the complications related to the introduction of Veress needle and the first port. A study comprising of 6512 laparoscopic cholecystectomies[12] took data from French Society of Intestinal Surgery and French Society of Endoscopic Surgery and Operative Radiology. It showed that 87 patients out of 6512 required conversion to open cholecystectomy. Out of these 87, three were due to visceral injury related to entry of first trocar. Some of these (35%) conversions were due to haemorrhage, which also included bleeding from mesenteric vessels due to trocar injury.

The largest ever study presented is by Deziel[13]. It is a multi centre study comprising of 77,604 patients undergoing laparoscopic cholecystectomies. It shows 0.5% incidence of bleeding and 0.14% incidence of bowel injuries, demanding conversion to open procedure and hence significantly increasing the hospital stay and morbidity.

Chapron[14] in a recent article reported that vascular injuries in laparoscopic surgery are among the most serious complications and 76.5% of these injuries occur during the setup phase of laparoscopy, because of the insertion of either the Veress needle or the first trocar. These findings are comparable to another study by Hashizume[15] presented in 1997. Another study from Netherlands analyzed the data of more than 500,000 laparoscopic procedures and showed that significantly fewer vascular injuries occurred when open laparoscopy was used as compared to the closed technique (0.075% versus 0%, chi-square+9.37, p=0.002)[16]. The only way to avoid these vascular and visceral injuries during the setup phase of laparoscopic surgery is the use of open technique described by Hasson.

In our own experience of 274 laparoscopic procedures in nearly 4 years, we did not encounter a single vascular or visceral injury related to the setup phase of the laparoscopic procedure. We also encountered 77 patients (28%) with a paraumbilical hernia and we feel that it is convenient to repair these hernias when open technique of laparoscopy is used.

For laparoscopic procedures in emergency settings the open technique is especially useful, as the bowel loops are dilated and are more susceptible to injury[16]. We also observed this fact while operating for acute cholecystitis[3].

Another benefit of open technique is the big size and specimens are easily retrieved with subsequent closure of the fascial defect[17].

We conclude that open laparoscopic technique using Hasson's cannula is not only useful in the presence of scars due to previous laparotomy but is recommended for routine use in all laparoscopic procedures.

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A REVIEW OF 52 CASES OF EMPYEMA OF THORAX IN ADULTS (ETIOLOGY, MICROBIOLOGY AND MANAGEMENT)

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ABSTRACT:
Fiftytwo cases of empyema of thorax were admitted in Chest Medicine Unit, JPMC from January 1995 to August 1997. There were 39 male and 13 female, with average age of 42 years (14 to 70 years). 70% (36) had empyema secondary to bronchopulmonary infection, 5.76% (2) had ruptured liver abscesses and 13.46% (7) had iatrogenic empyema. The most common clinical manifestation was fever 82%, cough and chest pain (59%), dyspnoea (32%) and weight loss (19%). The commonest organism isolated was Pseudomonas aeurogenosa (13%), followed by E. coli and Staph. aureus 11% each. Therefore it is necessary that Bronchopulmonary infection should be adequately managed to prevent Empyema Thoracis.

KEY WORDS: Empyema thoracic, Etiology management.

INTRODUCTION

Suppuration in the pleural space, empyema thoracis, was recognized and treated with open drainage by Hippocrates. Despite its historical significance and the advancement of medical science, it still remains a challenging clinical entity causing significant morbidity and mortality[1]. The first line of treatment for empyema is antibiotics and thoracotomy. However, with the emergence of antibiotic resistance and an increase in the number of patients with compromised immunity pleural infection has become a challenge for management[2].

Etiology, organisms involved, concomitant diseases, prognosis and management differ from series to series.

PURPOSE OF STUDY

The aim of this study was to evaluate the etiology and microbiology of organisms in empyema at Jinnah Postgraduate Medical Centre (JPMC), Karachi.

MATERIALS AND METHODS

This study was conducted at JPMC, Thoracic Medicine Department on 52 cases over a period of 2 years and 8 months (January, 1995 to August, 1997).

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Case reports of the patients were analysed with reference to diagnosis, age, sex, symptoms, etiology, culture reports, date and success of procedures done and length of hospital stay. Empyema was diagnosed on grossly purulent pleural aspirate, positive gram's staining and culture.

Thoracentesis was performed under sterile conditions. Appropriate antibiotic therapy and cavity drainage with intercostal chest tube attached to an underwater seal system was done. Fibrinolytic therapy with streptokinase was done in 5 cases (9.61 %) of multiloculated empyema diagnosed on ultrasound of the chest, which failed to respond satisfactory to intercostal chest tube drainage. These patients had multiloculated pleural effusion, with a failure of drainage of fluid via chest tube i.e., less than 100 ml during the proceeding 24 hours. Streptokinase was installated in a dose of 250,000 units diluted in 100 ml of normal saline per installation. Maximum of 3 installation were given. Effectiveness was assessed by chest radiotherapy, serial chest ultrasound and monitoring of volume of fluid drained.

RESULTS

The review includes 52 cases of empyema of which 39 were male and 13 female; their ages ranged from 14 to 70 years with an average age of 42 years. Twenty four patients were between the ages of 40 to 60 years. Pleural

fluid cultures were positive in 50% (26 patients), 86.53% (45 patients had pleural effusion at hospital admittance, 13.46% (7 patients) were due to hospital acquired infections. Mean hospital stay was 30 days, but the duration of stay increased significantly, to 46 days, for patients with nosocomial infections.

The most common clinical manifestations were fever 83%, cough, chest pain (59%) and weight loss (19%). The pleural effusion had a loculated radiographic and ultrasound appearance in 23% (12 cases), and free fluid was noted in the remaining 76.92% (40 cases).

Diabetes mellitus 9.61% (5), Hypertension 5.76% (3), Valvular heart disease 3.84% (2) and malignancy 7.69% (4) were the associated diseases with patients. In the remaining 38 patients no predisposing factor or underlying disease was identified. (Table-I.)

TABLE-I ASSOCIATED DISEASES

Diseases	Number	Percentage
Diabetes Mellitus	5	9.61%
Hypertension	3	5.76%
Valvular Heart Disease	2	3.84%
Malignancy	4	7.69%

Approximately 70% (36) had empyema secondary to bronchopulmonary infection. 13.46% (7) had iatrogenic empyema and 5.96% (3) had ruptured liver abscesses (Table-II.)

TABLE-II ETIOPATHOGENESIS OF EMPYEMA

Diseases	Number	Percentage
Secondary to Bronchopulmonary Infection	36	69.23%
a) Pneumonia	20	
b) Lung Abscess	13	
c) T.B.	3	
Iatrogenic	7	13.46%
a) Chest Tube Infection	5	
b) Post-Thoracotomy	1	
c) Pneumothorax	1	
Others	9	17.30%
a) Ruptured Liver Abscess	3	
b) Idiopathic	6	

Gram's staining was positive in 35 cases while 26 cases had pleural fluid positive cultures. The commonest organism isolated was Pseudomonas aeruginosa in 7 cases, followed by Staphylococcus aureus and E. coli in 6 cases each, 3 had Mycobacterium Tuberletor (TB). Streptococcus pneumoniae culture growth were positive in 2 cases, while H. Influenza and Klebsiella were seen in one case each. (Table-III)

The percentage of sterile fluid in our study was 50%. In hospitalized patients gram negative organisms predominated as the responsible etiologic agent of empyema. 90.38% (47) required intercostal chest tube drainage and antibiotics for an average of 22 days. The drainage time was increased in the hospital acquired as compared with community acquired infections. Repeated thoracentesis and antibiotics were given in 9.61% (5 cases). Due to the presence of permanent bronchopleural fistula, 3 patients were referred for surgical intervention and 2 patients with malignancy were sent to the Radiotherapy unit. (Table-IV)

TABLE-III MICROORGANISMS ISOLATED IN THE PLEURAL FLUID

Organisms	Number
Gram Positive Cocci	
Staphylococcus aureus	6
Streptococcus Pneumoniae	2
Gram Negative Bacilli	
Pseudomonas aeruginosa	7
Escherichia coli	6
Klebsiella pneumoniae	1
Hemophilus influenzae	1
Other	
Mycobacterium tuberculosis	3

TABLE-IV TREATMENT PATTERN IN EMPYEMAS

Treatment	Number of Patients
Antibiotics and Thoracentesis	05
Antibiotics and Closed Drainage	47
• Streptokinase Therapy	05
• Surgical Intervention	03

DISCUSSION

Thirteen percent of empyema were iatrogenic. Similar incidence of iatrogenic empyema have been noted by others[3,4]. This indicates that proper sterilizing techniques should be practiced before performing the procedures.

Associated diseases were present in 26.92% in our series which is similar to other studies[5,6]. In our series, underlying malignancy was found in 7% cases, which is less as compare to other reported series[3,7].

The percentage of sterile fluid in our series is 50%. This may be because of lack of adequate facilities of anaero-

bic culture in our setup and because of the fact that majority of the patients were on multiple antibiotics prior to admission in our department. However percentage of sterile pus is higher as compared to internationally reported series of 30-38%[7,8].

Patients with nosocomial infections required significantly longer hospitalization. Similarly, patients with associated bronchopleural fistula required significantly longer periods of both hospitalization and pleural drainage. Unsuccessful attempts to close fistulae by conservative methods resulted in significantly longer hospital stay.

The result of intrapleural installation of streptokinase was encouraging with first installation as drainage was noticeably improved to 10 times on day second and third of streptokinase administration. X-ray and symptomatic improvement were also noted. However, second installation of streptokinase did not show much improvement. Encouraging results were also noted by others[9,10]. Results indicates that consideration should be given to the use of intrapleural streptokinase for mutliloculated empyemas prior to open drainage.

In our study, bronchopulmonary infection was the most common cause of thoracic empyema (70%), this indicates that proper management of bronchopulmonary infection should be done to prevent the development of empyema.

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ROLE OF ULTRASOUND IN DIAGNOSIS OF APPENDICITIS

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ABSTRACT:
A prospective study was conducted over a period of 20 months at Karachi Adventist Hospital and Jinnah Postgraduate Medical Centre, Karachi in 75 patients (48 males and 27 females) presenting with clinical signs and symptoms of appendicitis. Ultrasound was performed using convex and microconvex probes.

Of 75 patients only 66 cases had appendicitis in acute, chronic and ruptured forms, sonographically on first examination. One case which showed swollen appendix with a collection around it proved to be perforated ileum at surgery giving a false positive result. 9 cases were re-examined after 24 and 48 hours and three more cases were diagnosed as appendicitis. Six cases had normal scan of abdomen, thus giving a positive predictive value (PPV) of 90.4% and negative predictive value (NPV) of 8.3% and diagnostic accuracy of 98%.

Ultrasound examination is a simple and highly reliable no-invasive investigation for diagnosis of appendicitis which can reduce unnecessary appendicitomies.

KEY WORDS: Ultrasound Appendicitis.

INTRODUCTION:

Appendicitis is the most common indication for emergency abdominal surgery in children[1] and adults of both sexes. Both morbidity and mortality are increased if the appendix perforates[2]. However in adults, history and clinical correlation helps in determining the diagnosis but in children this can be difficult and challenging[3]. The history may be confused or non-obtainable and the initial presentation may be highly variable[1,3]. Laboratory studies and plain radiographs are helpful mainly in excluding other diagnosis[2].

Ultrasound is non-invasive and is now considered a reliable tool in diagnosis of acute abdomen including acute appendicitis. Since the first report of an ultrasonographically demonstrated inflammed appendix in 1981[4], there have been numerous publications on the use of this diagnostic tool. These studies demonstrate a sensitivity of 75-94%, a specificity of 86-100% and an overall diagnostic accuracy of 87-96%.

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PURPOSE OF STUDY:

The purpose of our study is to highlight the role of ultrasound in the diagnosis of acute appendicitis in patients with clinical signs and symptoms and to emphasize the importance of re-examination after 24 and 48 hours.

PATIENTS AND METHODS:

The study was performed at Karachi Adventist Hospital and Jinnah Postgraduate Medical Centre, Karachi. 75 patients with clinical signs and symptoms of appendicitis aged 4 to 55 years were included in the study, 48 male and 27 female, with male to female ratio 2:1.

Ultrasound examination was performed using convex and micro-convex 3.5, 3.75 and 5.0 MHz probes on Ecocee power color Doppler, Tosbee at Karachi Adventist Hospital and Shimasonic 310, Shimadzu at Jinnah Postgraduate Medical Centre, Karachi.

With patient in supine position the abdomen was examined. The appendix was identified by anterior and posterior abdominal walls and tracing ascending colon down to ceacum. Appendix was sought in its various positions at its sites in which it is seen i.e., retrocecal, pelvic, parace-

cal, preileal and post ileal. Ultrasound reports were compared with the operative findings and histopathology reports.

On ultrasound examination, the appendix appears as a finger like structure and was interpreted as normal if after careful examination the appendix was not seen or if seen, the wall thickness was less than 2 mm and outer wall to wall diameter was less than 6 mm[6,9].

A positive ultrasound study showed an enlarged non-compressible appendix with outer wall to wall thickness measuring more than 6 mm in diameter; the presence of complex mass or presence of appendicolith. In cases of ruptured appendix there was collection around appendix which tracked down the paracolic gutter and into the pelvis.

RESULTS:

Sixty six patients were diagnosed to have acute appendicitis on ultrasound examination except one patient. This diagnosis proved to be correct both at operation and on histopathological examination (Table I). A false positive result was in a patient with perfoated ileum. Ultrasound examination had shown a swollen appendix due to collection around it, thus giving a false impression of perforated appendix.

Nine cases were kept under observation and re-examined. Second examination after 24 hours showed 2 of the 9 cases had swollen appendicies, 7 cases were re-examined for a third time after 48 hours, one more case with swollen appendix was seen. Six patients did not show any abnormality on any of the three examinations and clinically they improved and were not operated.

TABLE-I **Correlation of ultrasound with surgery and histopathology studies in 75 patients**

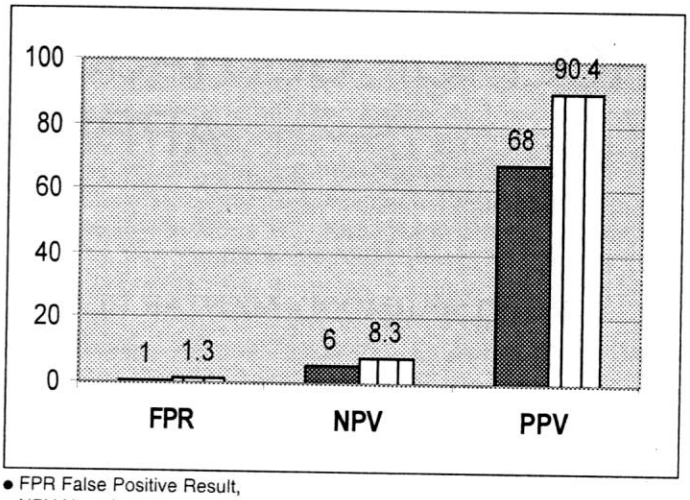
ULTRASOUND EXAMINATION	AFTER SURGERY HISTOPATHOLOGY STUDIES	NUMBER OF PATIENT	%
Appendicitis	Appendicitis	68	90.4%
Appendicitis	Perforated ileum	01	1.3%
Normal	No operation	06	8.3%

Over all diagnostic accuracy of 98.7% 74 / 75.)

Predictive values are given in Fig-I

DISCUSSION

Ultrasonography of the right lower quadrant of abdomen has emerged as a useful aid in the clinical diagnosis of acute appendicitis[2]. Our present study however demonstrates the role of ultrasound in diagnosis of appendicitis in-patients with clinical signs and symptoms and importance of re-examination and reviewing after 24 hours and 48 hours in children and adults of both sexes.



- FPR False Positive Result,
- NPV Negative predictive value.
- PPV Positive predictive value.

Figure 1 Schematic diagram showing percentage to patient ratio of cases.

The radiological diagnosis of appendicitis has progressed from plain abdominal film, which is rarely specific enough to be useful to single contrast barium enema. However, a barium study performed on an unprepared bowel has many limitations such as nonvisualization of appendix, patient discomfort, time consumption and radiation exposure[2]. CT scanning and leucocyte scintigraphy occasionally have been used to confirm this diagnosis but both procedures like barium enema are time consuming and technically difficult to perform[7].

The sonographic findings in early appendicitis may be limited to asymmetric, slightly thickened appendiceal wall without significant edema or luminal distension[7]. (Figs 2-5) Thus we recommend that in-patients with acute abdomen, whenever clinical diagnosis of appendicitis is in doubt, the clinician should consider ultrasound imaging[2] especially in young girls, children and old age patients.

Ultrasound can be extremely useful in assisting the Surgeons and in decreasing the rate of unnecessary appendicectomies. It also detects of appendicitis before perforation[11].

CONCLUSION:-

For diagnosing appendicitis, ultrasound should be considered prior to surgery. Re-examination after 24 hrs or 48 hrs certainly increases diagnostic accuracy.

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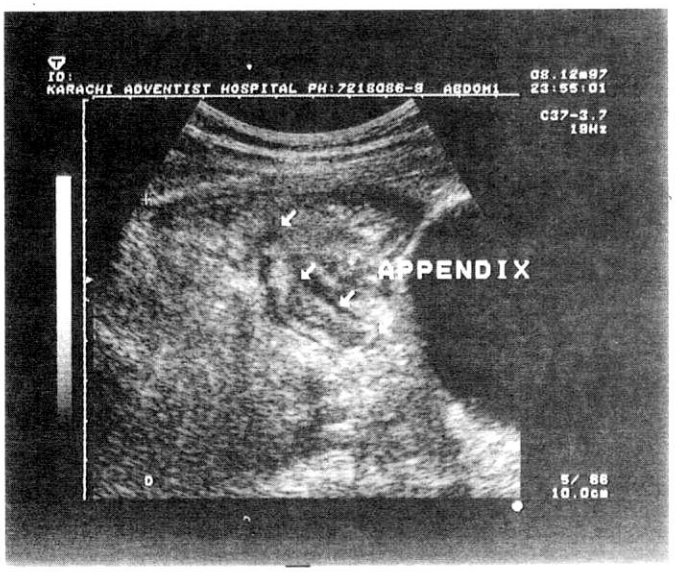

Figure 2 Scanning of right iliac fossa with 3.75 MHz convex probe show a retrocecal enlarged and inflammed appendix as indicated by arrows.

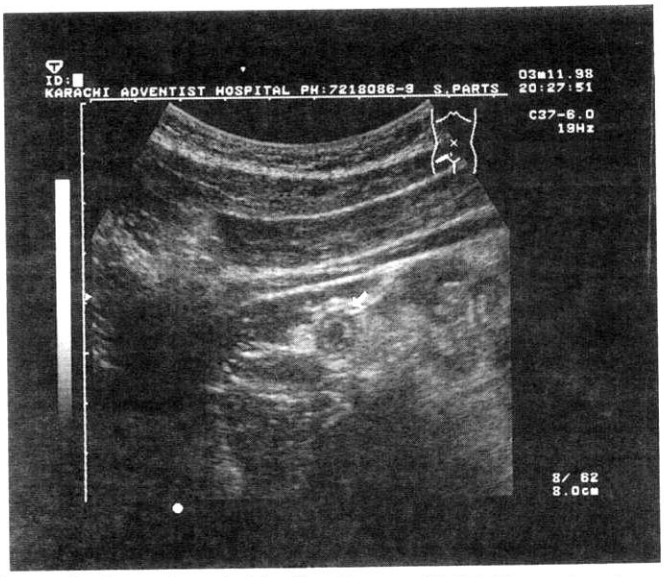

Figure 3 Scanning of right iliac fossa with 5 MHz probe show enlarged and inflammed appendix in true trnasverse section appears typically like a Ring as indicated by arrows.

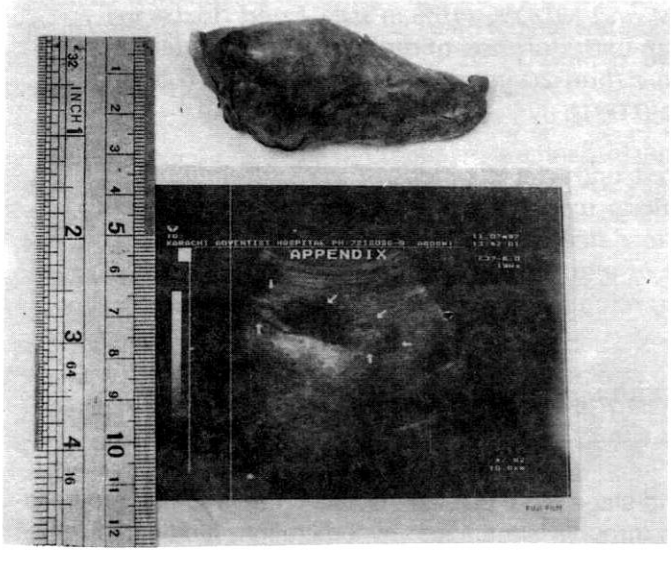

Figure 4 This slide shows enlarged inflammed appendix with a fecolith materials in its tip. It measured 7.052.8cm on ultrasound which was confirmed after surgery and measured with scale as shown.

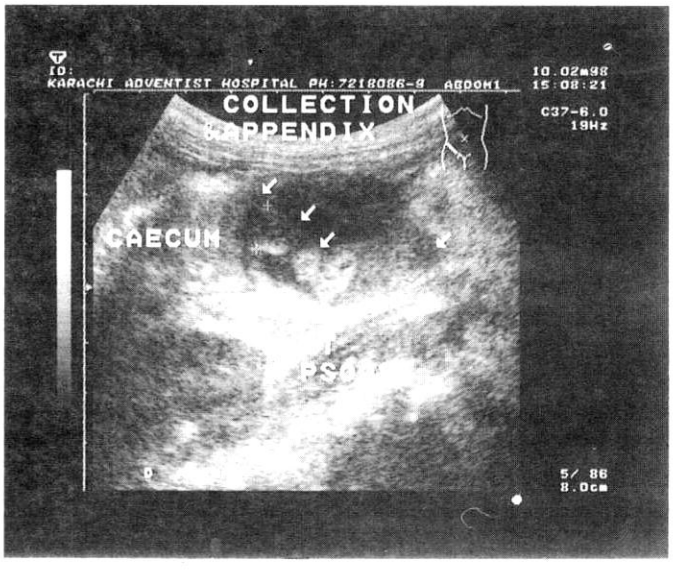

Figure 5 This slide shows an inflammed ruptured appendix with collection in RIF which is seen as hypoechoic area around appendix.

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MICROALBUMINURIA: ITS RELATION WITH GLYCAEMIC CONTROL AND DURATION OF DIABETES

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ABSTRACT:
Diabetic nephropathy is one of the most dreadful complications of diabetes mellitus. It is a progressive disorder culminating in end stage renal disease. Microalbuminuric stage of diabetic nephropathy is reversible with therapeutic intervention and good metabolic control. Hundred patients were studies for microalbuminuria duration of diabetics and its control in this study which showed its prevalence of 37% in both IDDM and NIDDM. (45% in IDDM and 35.1% in NIDDM). Microalbuminuria had a linear relationship with duration of diabetes. Its prevalence was 87% in diabetics with diabetic duration of more than 20 years, while it was only 5.88% in patients with diabetes of less than 5 years (P < 0.001).

Impaired glycaemic control was directly associated with development of microalbuminuria. Regular fasting and post-prandial sugar levels along with HbA_1c estimation were used to assess glycaemic status. Micral test was used to detect microalbuminuria. With the high prevalence of diabetes mellitus and soaring cost of management of nephropathy, an early detection for prevention of mortality and morbidity related to nephopathy cannot be overemphised

KEY WORDS: Microalbuminuria, Diabetic nephropathy.

INTRODUCTION:

Diabetes Mellitus is an endocrinopathy characterized by polyuria, polydipsia, polyphagia, weight loss and recurrent infections[1]. It is defined as relative or absolute deficiency of pancreatic hormone, Insulin[2].

Discovery of insulin in 1921 is the most significant event of medical history[3]. It was thought at that time that cure of diabetes had been achieved; however, decades later doctors are still facing clinical problem secondary to diabetes mellitus.

The most intriguing aspect of the diseases is the development of late complications like nephropathy, neuropathy and dermopathy etc. Nephropathy is one of the major causes of mortality and morbidity[4]. Its early detection is significant, as late nephropathy is progressive, ending in end-stage renal disease. Diabetic nephropathy progresses through five stages: hyperfiltration, glomerular lesion with no clinical evidence of nephropathy, incipient nephropathy, persistent proteinuric stage and end stage renal disease.

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Strict glycaemic control and therapeutic intervention can halt an otherwise progressive pathology[5,6]. Incipient nephropathy or microalbuminuric stage of renal damage is the limit of reversible renal pathology[7]. Detection of nephropathy at this stage will help in preventing end stage renal disease. Microalbuminuria is defined as rate of urinary albumin excretion between 20-200 ug/min[8]. This is equal to 29-299 mg/l in male and 30-299 mg/l in female[9].

PURPOSE OF STUDY:

The purpose of this study was detection of micro-albuminuria and its association with glycaemic control and diabetes duration in patients attending our Diabetic Clinic.

PATIENTS AND METHODS:

This study was conducted in the Diabetic Clinic of Medical Unit-III (Ward-7), Jinnah Postgraduate Medical Centre (JPMC) Karachi from March 1996 to December 1996. The diabetic clinic of Medical Unit-III, J.P.M.C. renders facilities of out patient department, regular followups, laboratory and in-patient facility, when needed, for diabetic patients.

In this study 100 patients were registered, fulfilling following criteria: patients with more than one year of diabetes mellitus, both I.D.D.M. and N.I.D.D.M., of either sex, normotensive and with absence of overt proteinuria.

Patients with evidence of U.T.I., previous renal pathology, congestive heart failure or COPD, more than 75 years of age and pregnant were excluded from this study.

Of the patients included in this study 47 were male and 57 female. Average age was 41.5 years (15-68 years). 80 patients were having N.I.D.D.M. and 20 were I.D.D.M. 35 male patients were N.I.D.D.M. while 45 female were diagnosed as type-II diabetics. Out of 20 I.D.D.M. 8 were female and 12 were male diabetics.

Patients were divided in four groups on the basis of duration of diabetes: Group A 5 years, Group B 05-10 years, Group C 11-20 years, Group D >20 years.

Detailed history was taken and clinical examination was performed on each patient. Complete blood picture, urine R/E, fasting blood sugar, O.G.T.T. (when needed), X-ray chest, E.C.G., renal status by serum urea, creatinine and creatinine clearance were performed on each patient. Glycaemic control was assessed by regular blood sugar estimations and Hemoglobin A_1c levels.

Micral test (Boehringer Mannhem) was used for detection of microalbuminuria. This test was performed on early morning urine sample on two different occasions, three months apart. Micral test strip is a semi quantitative test in which color reaction is mediated by an antibody bound enzyme. Color of strip is compared with the color scale on the test strip vial label. Reaction color lighter than color block corresponding to 20 mg/l indicates normoalbuminuric state. It is a semi quantitative test as microalbuminuria up to 100 mg/l can be measured.

RESULTS:

Every subject included in this study was tested twice for microalbuminuria and those who were positive on both occasions were labelled as microalbuminuric. In total 37 patients were diagnosed as microalbuminuric.

Out of 37 positive 18 (48.64%) were male and 19 (51.35%) were female. Of the 20 type-I diabetics, 9 patients (male-5, female-4) tested positive for microalbuminuria (45%) while in type-II diabetics, 28 (male-13, female-15) had microalbuminuria (35.1%).

Duration of diabetes is the most significant factor in development of micro-albuminuria. In group A of 17 patients one was positive (5.88%) while in Group D 8 patients had micro-albuminuria (87.50%). (Table I)

TABLE-I Micro-albuminuria and diabetes duration

GROUP	NO. OF PATIENTS	DIABETES DURATION	MICRO-ALBUMINURIA
A	17	< 5 years	1 (05.88%)
B	27	5-10 years	4 (14.82%)
C	48	11-20 years	25 (52.08%)
D	8	> 20 years	7 (87.50%)

Impaired glycaemic control accelerates development of diabetic nephropathy. This fact was revealed by persistent hyperglycemia in patients with micro-albuminuria. Range of fasting blood sugar in these patients was between 240-397 mg%. None of the positive cases were very high. Biochemical markers of renal functions like serum urea, creatinine and creatinine clearance were well within normal range. G.F.R. measured by creatinine clearance was between 99-119 ml/min, average 109 ml/min.

DISCUSSION

Microalbuminuric stage of diabetic nephropathy is considered reversible if immaculate glycaemic control is achieved[10]. Results of D.C.C.T. have revealed significance of glycaemic control in the prevention of diabetic complications. This study was designed to identify diabetic patients who had developed incipient nephropathy. Results of the study were significant, as the prevalence rate of microalbuminuria was 37%. In IDDM it was 45% while in NIDDM it was 35.1%. When these results are compared with similar studies, this prevalence rate is on the higher side.

Parving conducted a study on type-I diabetics and documented 22% prevalence of incipient nephropathy[11]. Metcalf, reported 24.1% prevalence in newly diagnosed diabetics and 20.6% in previously diagnosed diabetics[9]. Thalassinis, reported a 31.7% prevalence in type-I and 40.7% in type-II diabetics[12]. Simmons has reported 22.1% prevalence of microalbuminuria in European race but 33.3% in polynesian type-II diabetics of Pacific Islands[13].

Another difference in this study was female preponderance with 51.35% female diabetics having microalbuminuria. This female preponderance is contradictory to Western studies which show higher prevalence in males[14,15]. However, Nigerian study conducted by Erusmus, clearly

demonstrates 59% female prevalence rate in type-II diabetics as compared to 54% in males[16].

Different factors seem to play their part in higher rate of incipient nephropathy. Racial variations, environmental factors, dietary habits, education, lack of medical facilities and poor glycaemic control are the most probable factors which resulted in higher prevalence rate. Community based studies are necessary to analyze impact of these factors. These studies also emphasize that if early nephropathy is not detected and managed, it will result in higher number if diabetic patients with end stage renal disease.

Diabetes duration has a linear relationship with microalbuminuria. In group D prevalence was 87.5% while in group A it was 5.88% ($P < 0.001$). This fact is also highlighted by other studies as well. Diabetes duration is an important factor in the natural history of nephropathy[12,17].

Glycaemic control is an important determinant for development of microalbuminuria. All patients with incipient nephropathy had evidence of impaired glycaemic control. Chase reported 3.6 times increase in prevalence of microalbuminuria in patients with poor control. Metcalf reported similar results. Therefore, good metabolic control can decrease incidence of nephropathy in diabetic patients[19,20,21].

Another interesting finding in this study was that no biochemical marker of renal impairment was detected in patients with incipient nephropathy. The glomerular filtration rate was well within normal limits. Therefore, it is advisable that microalbuminuria should be checked in diabetic patients regardless of their renal functions.

CONCLUSION:-

Prevalence of incipient nephropathy in our population is higher than in Western population. Poor glycaemic control and diabetes duration directly influence development of incipient nephropathy. Further studies are necessary to evaluate the effect of different variables in prognosis of diabetic nephropathy.

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THE VALUE OF FLEXIBLE CYSTOSCOPY IN COMBINATION WITH URINE CYTOLOGY IN THE DIAGNOSIS OF RECURRENT TRANSITIONAL CELL CARCINOMA OF THE URINARY BLADDER

SAIFAL KHAN TURK, G.M. MEMON, KHALIQUE R. SHAIKH

ABSTRACT:
Specimens of early morning and freshly voided urine of 58 consecutive patients with known Transitional Cell Carcinoma (T.C.C.) were submitted 10 days before check cystoscopy. The urine specimens were analysed by two pathologists, with no knowledge of the patients' history. All patients then underwent cystoscopy under general anaesthesia. Findings of cystology were correlated with cystoscopy findings. Urine Cytology predicted 85% of all recurrent tumours found subsequently at cystoscopy. 88.5% of patients with negative urine cytology had no recurrent tumours. Only 53% of patients with positive cytology were shown to have recurrent T.C.C.

Urine cytology is a good adjunct to assessing the suitability of flexible cystoscopy in the followup of patients with transitional cell carcinoma (T.C.C) of urinary bladder
Thus we concluded that achieving bony stability in intertrochanteric fractures is of prime importance in prevention of complication of fixation.

KEY WORDS: Cystoscopy, Urine cytology, Transitional cell carcinoma bladder.

INTRODUCTION

In the management of T.C.C. of the urinary bladder, check (review) cystoscopy plays an important role and until recently, most of these procedures were performed under general anaesthesia. The introduction of cystoscopy under local anaesthesia using a flexible fibreoptic cystoscopye has offered an alternative method of surveillance of these patients, although patients with recurrent tumour still require general anaestheisa for resection/ablation with conventional rigid instruments. Any means of predictiing recurrent tumour before systoscopy would allow greater use of the flexible cystoscope and reduce the number of patients requiring general anaethesia with a concomitant reduction in both patient morbidity and cost. Since Papanicolaou and Marshall reported the technique by which microscopic examination of urinary sediment detected exfoliated cancer cell[1], exfoliative urine cystology has become an established investigation in the diagnosis of T.C.C. in both symptomatic patients[2,3] and for population screening[4]. Because of its low specificity urine cytology cannot replace cystoscopy entirely, but it may have an ancillary role. This study assessed the value of exfoliative urine cytology in determining the suitability of fibreoptic cystoscopy under local anaesthesia for followup of patients with T.C.C.

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PURPOSE OF STUDY

The study was carried out to study the value of urine cytology in predicting recurrent tumour in patients undergoing surveillance for transitional cell carcinoma (TCC) and to assess suitability of these patients for flexible cystoscopy.

PATIENTS AND METHODS

This study comprised of 58 patients (45 men and 13 women, with mean age of 52 years) with an established histological diagnosis of T.C.C. of the urinary bladder, who were assessed over a one year period. The duration of disease ranged from 3 to 64 months. Twelve patients had received radical radiotherapy, 3 had intravesical chemotherapy, a patient had both radiotherapy and systemic chemotherapy. Ten days before review cystoscopy, each patient was asked to submit a specimen of early-morning urine (EMU) and freshly voided urine (FVU). EMU to determine if it improved the detection rate. Each specimen was centrifuged and two slides made from each specimen and stained with haemotoxylin and eosin. All slides were examined by two pathologists with no prior knowledge of the diagnosis or treatment history.

The criteria of Koss[5] was used to assess malignant and atypical cells. Maligant cells showed large hyperchromatic nuclei with coarse chromatin, while atypical cells were regarded as those with enlarged nuclei showing slight to moderate hyperchromasia but not exhibiting the full nuclear abnormalities of malignancy. Specimens were reported as containing malignant cells, atypical cells, no abnormal cells or unsuitable for diagnosis. A specimen was labelled as non-diagnostics when the specimen was either poorly preserved or there were fewer cells for assessment or the cell were obscured by inflammatory cells in debris. Specimens were recorded as having positive cytology when malignant or atypical cells were found and specimens with no abnormal cells were recorded as negative cytology.

All patients then underwent standard rigid cystoscopy under general anaesthesia, irrespective of the results of urine cytology and cystoscopic findings were recorded. Abnormal mucosa was biospsied for histological assessment and recurrence of T.C.C. was only included when confirmed histologically. According to the criteria of Mostofi6 TCC was graded and staging was done according to UICC system[7].

RESULTS

Fifty-eight patients' samples were analysed cystologically. Malignant cells were reported in one or both of the paired specimens in 15 cases, being positive in both the EMU and FVU specimens in 12 of these. Atypical cells were found in one or both specimens in 17 cases, being present in both the EMU and FVU specimens in 13 instances, Twenty paired specimens were considered to show normal cytology, and in 6 cases both the EMU and FVU specimens were considered undiagnostic. (Table-I)

In 20 cases with negative cytology, cystoscopic abnormalities were present in 5 cases. There were 6 cases in which both the urine specimens were undiagnostic on cytology (Table-I)

TABLE-I **URINE CYTOLOGY NEGATIVE**

The eventual outcome after cystoscopy in patients with negative cytology.

	Normal Cells		Non-diagnostic		Total	
	No.	%	Cell No.	&%	No.	%
Normal cystoscopy	15	(58%)	3	(11%)	18	(69%)
Recurrent TCC	2	(8%)	1	(8%)	3	(12%)
Radiotherapy Changes	1	(4%)	0	(0%)	1	(4%)
Inflammation	2	(8%)	1	(4%)	3	(12%)
Normal biopsy	0	(0%)	1	(4%)	1	(4%)
Total	20	(77%)	6	(23%)	26	(100%)

Non diagnostic, both urine samples acellular. Normal cells both urine samples contained normal epithelial cells only.

Of the 58 cystoscopicies, 29 revealed abnormal mucosa. Only 20 cases were found neoplastic histopathologyically, comprising of 17 with T.C.C. and 3 with dysplasia. The other 9 biopsies revealed radiation changes in two, chemotherapy changes in one, chronic inflammation in 4, and inadequate biopsy specimen in one, and significant histological abnormalities in one (Table-II).

TABLE-II **URINE CYTOLOGY POSITIVE**

The eventual outcome after cystoscopy in patients with positive cytology.

	Maligant Cells		Atypical Cell		Total	
	No.	%	Cell No.	&%	No.	%
Normal cystoscopy	3	(9%)	8	(25%)	11	(34%)
Recurrent TCC	9	(28%)	5	(16%)	14	(44%)
Dysplasia	1	(3%)	2	(6%)	3	(9%)
Chemotherapy Changes	1	(3%)	0	(0%)	1	(3%)
Radiotherapy Changes	0	(0%)	1	(1%)	1	(3%)
Inflammation	1	(3%)	1	(1%)	2	(6%)
Total	15	(47%)	17	(53%)	32	(100%

Malignant one or both urine samples containing malignant cells. Atypical, one or both urine samples containing atypical cells.

The patients with malignant cytology had no mucosal abnormality at cystoscopy, one had bladder calculus and one on subsequent review had normal cytology because degenerate urothelial cell were mistaken for malignant cells.

Of the 17 cases with atypical cell in one or both of the paired urine specimens, 9 had abnormalities at cystoscopy. The other 8 cases with atypical cells at cytology showed no abnormality on cystoscopy.

The sensitivity of urine cytology in identifying all tumours

and dysplasia was 17/21 (81%) with a specificity of 17/32 (53%). Table-III shows sensitivity of urine cytology compared with the histopathological grade and stage of all recurrent T.C.C. In this small study sensitivity was higher in high grade (G2/G3) T.C.C.

TABLE-III

Urine Cytology result for the histological grades/stages of recurrent T.C.C.

Grade/Stage	Number	Positive Cytology	Sensitivity (%)
G1/pTa	5	3	60
G2/pTa	5	4	80
G2/pT1	1	1	100
G3/pT1	2	1	50
G3/pT3	1	1	100
G3/pTis	3	3	100
Total	17	15	83

DISCUSSION

This study has shown a high rate of detection of recurrent TCC using exfoliative urine cytology which was more pronounced with tumours of higher grade and stage (6 of 7G2pT1, G3pTis, G3pT1), compared to those of lower grade (7 of 10G1pTa, G2pTa). All patients with dysplasia also had abnormal cytology. On the other hand, there was a high level of false positive results with 11 of 32 having normal mucosa at cystoscopy and 15 of 32 being normal or having no neoplastic abnormalities.

For cytological analysis FVU was superior to EMU samples, latter had artifacts due to degeneration of cells from prolonged exposure to hyperosmolar urine. Because of this it is important that urine specimen submitted for cytological analysis should be as fresh as possible and processed immediately for analysis.

Urine cytology before review cystoscopy correctly predicted 83% of all recurrent TCC while missing 17%. It rigid cystoscopy under general anaesthesia was reserved for patients with positive urine cytology, then 26 (45%) would have undergone flexible cystosocpy under local anaesthesia and 32 (55%) would have undergone rigid cystoscopy. Of the latter group, 15 patients would have undergone cystoscopy under general anaesthesia unnecessarily, whereas three patients in the former group who under went flexible cystoscopy would have then required a second procedure under general anaesthesia for tumour ablation. Most of the patients with recurrent TCC (17 of 20) were predicated accurately and correctly assigned for rigid cystoscopy under general anaesthesia, while 23 of the 26 patients who had no neoplastic pathology were identified as such by urine cytology and were spared general anaesthetic.

It is concluded that urine cytology before review cystoscopy maximise the use of flexible cystoscopy in the followup of patients with TCC. The avoidance of unnecessary general anaesthesia should reduce both patient morbidity and cost.

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MESENCHYMAL HAMARTOMA OF LIVER

A CASE REPORT

JAMSHED AKHTAR, ALI RAZA BROHI, WAJEEHUD DIN, NAUREEN ALI, ABDUL AZIZ

ABSTRACT:
An eleven months old male baby presented with abdominal distension, which was noticed by his mother one month prior to admission. On examination, a mass occupying almost whole of the abdominal cavity was found. Ultrasound and C.T. scan failed to show precise location of the tumour. On exploration a huge firm mass with solid and cystic areas arising from inferior surface of right lobe of liver with broad base was found. The mass was excised in toto. Post operative recovery was uneventful. Biopsy report was Mesenchymal Hamartoma of liver, which is the second most common benign liver tumour in children but is a rare cause of solid intra-abdominal tumours in infancy.

KEY WORDS: Hamartoma, hepatic tumours,. infants.

INTRODUCTION:

Primary liver tumours are rare in infancy. Of primary liver tumours malignant tumours are more common than benign lesions[1]. In this report we are presenting an experience with uncommon benign liver neoplasm, mesenchymal hamartoma, which usually presents under two years of age, with review of literature.

CASE REPORT:

An eleven months old male infant weighing 9 kg presented with one month history of abdominal distension. The fullness was noticed incidentally by mother while feeding the baby. There were no associated complaints at that time. Over ensuing weeks the distension increased to such an extent that patient could hardly breathe. On examination patient was malnourished tachypnoeic and anaemic. Jaundice was absent. A huge firm, non tender mass occupying almost whole of the abdomen was palpable. Ultrasound showed a huge mass with cystic and solid areas. Precise location could not be ascertained. IVP showed normal functioning kidneys. C.T. Scan revealed a huge mass with solid and cystic areas (Fig. 1). Liver profile showed slightly deranged enzymes level. Alpha feto protein was within normal limits. Patient was transfused blood and exploratory laparotomy was undertaken. On opening abdominal cavity, a huge firm mass arising from the inferior surface of right lobe of the liver with broad base adjacent to porta hepatis was found. Mass excised completely. Raw surface of the liver was over sewn.

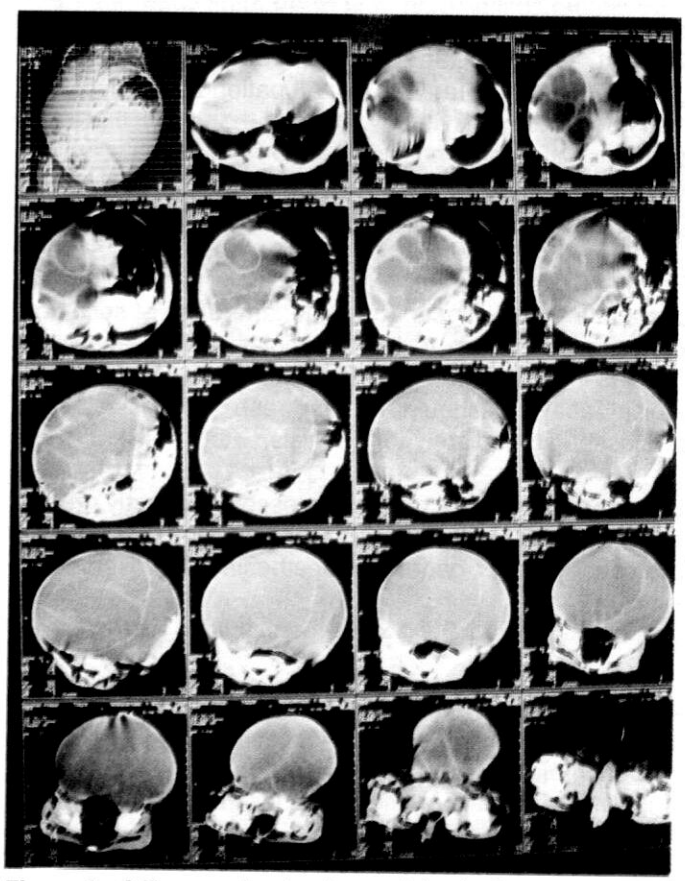

Figure 1 C.T. scan showing huge abdominal mass with solid and cystic areas.

Tumours weighed 2.5 kg. On cut section solid and cystic areas were found with gelatinous material filling the cystic areas (Fig. 2). Biopsy report revealed benign mesenchymal hamartoma.

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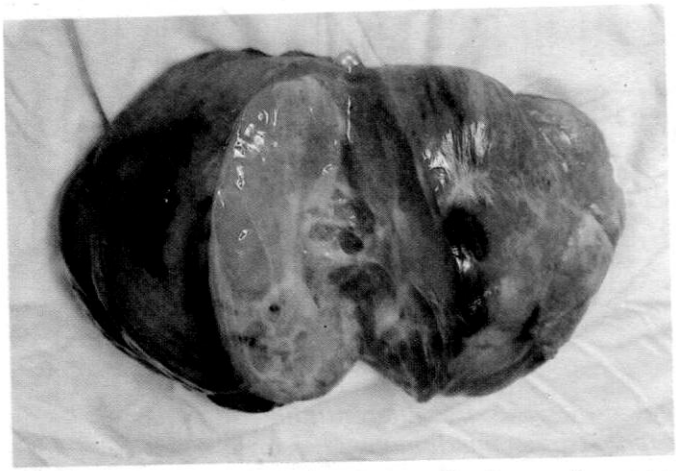

Figure 2 Cut section of the tumour showing cystic spaces filled with gelatinous material.

DISCUSSION

Mesenchymal hamartoma is a rare benign liver tumour arising from mesenchyme of the portal triad[2]. It was first described in 1903 by Maresch. It was Edmondson who used the term mesenchymal hamartoma in 1956. It represents about 5% of all primary hepatic paediatric tumours[3]. The experience of individual paediatric surgeon is limited. One hardly see 1-2 cases in life time according to those who reported these cases in literature. Its rarity could be appreciated by the fact that of 1237 liver tumours collected in literature by Weinberg only 6% were hamartoma[4]. In a series from Children Memorial hospital, Michigan only 7 hamartoma were managed in 35 years[5].

Tumour usually presents as a asymptomatic mass but rapidly enlarging tumour may cause respiratory distress; as occurred in our case. A large tumour may results in heart failure[6] although it usually is a hypovascular lesion. Rapidly growing tumour may be associated with raised alpha feto protein level which is produced by proliferating hepatocytes[7]. In our case it was within normal limits.

Treatment of sypmtomatic lesion is surgical removal which is easily performed as most of them are pedunculated. Spitz and Brereton recommended reduction of vascularity of tumour by angiographic embolism as it facilitates resection[8]. Average tumour weight reported in literature is 1.3 kg. In a case reported from PIMS a 2 kg hamartoma was removed in a 2 years old boy[9].

Recently Barnhart et al from Children Hospital Michigan found an interesting feature of this tumour. They operated upon a patient at tenth day of life with a asymptomatic mass in right lobe of liver which on frozen section was found to be mesenchymal hamartoma. Because surgery was hazardous or would have required right partial hepatectomy they decided to observe the baby. The patient was follow-up and at 15 months of age the entire mass shrunk and got calcified. They therefore suggested the possibility of conservative management after confirming the diagnosis in a small asymptomatic lesion[10].

Mesenchymal hamartoma, although a rare benign tumour of liver should be considered in differential diagnosis of abdominal mass in infants and surgery should not be delayed in symptomatic lesions as delay may be associated with significant morbidity and rarely mortality.

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HISTOPATHOLOGICAL INTERPRETATIVE DIFFICULTIES OF A SOFT TISSUE TUMOUR

A CASE REPORT

ALEYA KHAN, ABID QAZI, NAEEM-UZ-ZAFAR KHAN

ABSTRACT:
This case is reported to explain the histological difficulties in differentiating soft tissue tumours. A childhood fibrosarcoma is reported which was misdiagnosed even on several reviews of histopathology slides. Though prognosis and treatment of soft tissue tumours are almost the same, there is still a need for proper histologic diagnosis, to place them in an appropriate group.

KEY WORDS: Soft tissue tumour, diagnosis.

CASE HISTORY:

A 12 years old male child was admitted to Children's Hospital PIMS, Islamabad with history of high grade fever and chest pain. He had received a blunt trauma on the left lower chest and upper abdomen seven months earlier. He remained unconscious for an hour and was resuscitated. No obvious abnormality was detected at that time. Ten days later, on an ultrasound abdomen, a left sided abdominal wall haematoma or a perisplenic abscess was suspected. After receiving intravenous antibiotics, he remained well for about two months, when he developed severe left sided abdominal pain. He was investigated and an abdominal wall abscess was diagnosed, while at that time X-ray chest was clear. Attempts were made to drain the abscess but failed, while biopsy taken reported the lesion to be haemangioendothelioma. Second review of the slides reported this tumour to be a case of pseudo-inflammatory tumour or possibly a case of haemangioendothelioma. He settled with intravenous antibiotics alone.

Two months later he again developed abdominal pain and high grade fever with dyspnoea. X-Ray chest and ultrasound abdomen showed left sided pleural effusion. Pleural tap was done, yielding about one liter of blood (Fig I). Pleural fluid examination was reported to be post-pneumonic haemorrhagic effusion with negative cytology. He remained well for five days when he again developed breathing difficulty. He was investigated again. An X-Ray chest, ultrasound abdomen and CT on this occasion reported pleural effusion with internal septation and consolidation of left lower lung (Fig 2). Previous biopsy slides

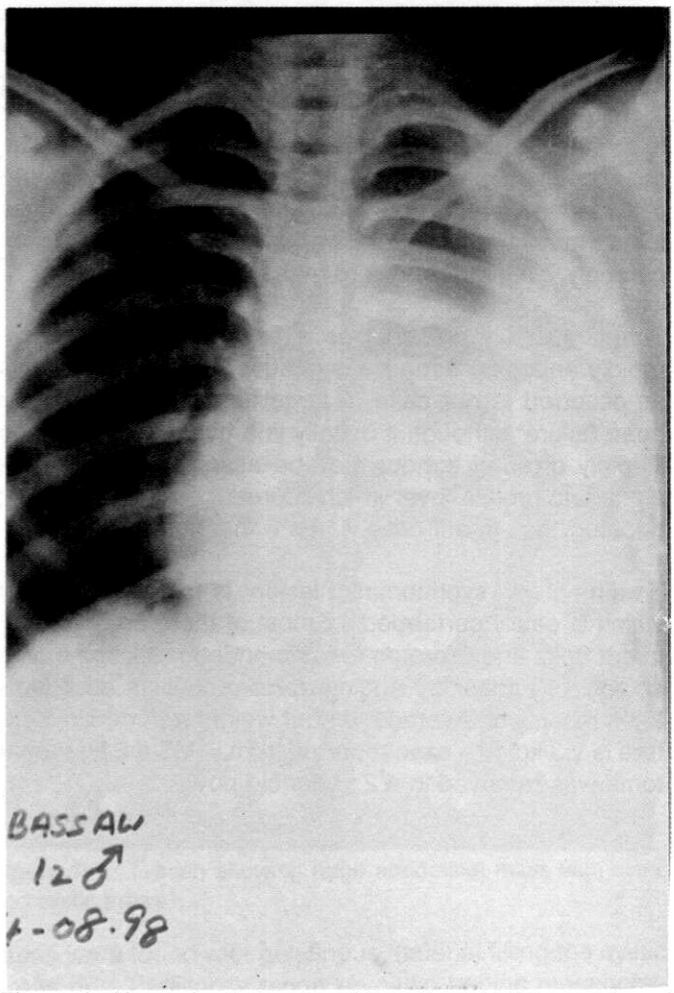

Figure 1 X-ray chest showing obliteration of left lower pleural cavity.

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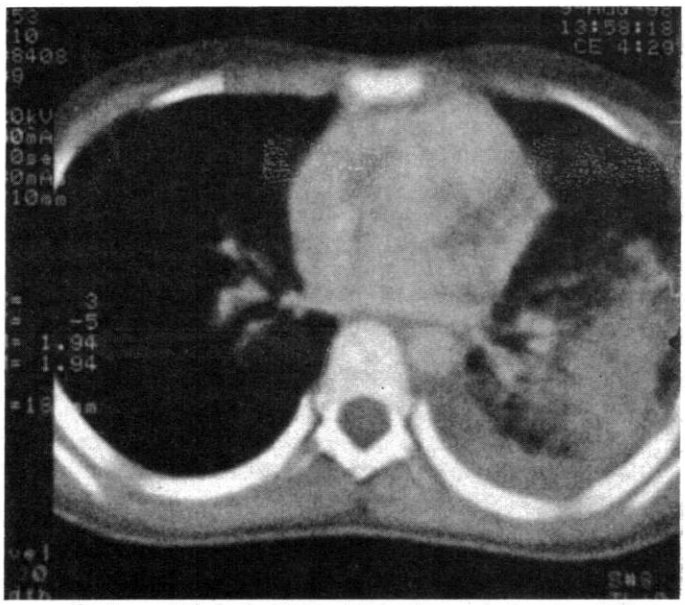

were reviewed by another laboratory and reported as Ewing's sarcoma or less likely to be Neuroblastoma or Lymphoma. Immunohistochemical stain MIC-2 was negative, excluding Ewing's sarcoma and the patient was left with differential diagnosis of Neuroblastoma or Lymphoma. With all these investigations and previous treatment, he was brought to us.

Figure 2 C.T. shows a solid tumor in left pleural cavity.

At admission he was afebrile with marked pallor. His vital signs were normal and he had no palpable lymph nodes. Examination revealed bilaterally symmetrical chest, with no mediastinal shift. Chest movements, vocal fremitus, vocal resonance, and breath sounds were decreased on left side and dull percussion note over left middle and lower zones of the lung with no added sounds. Rest of the systemic examination was normal. He had normal haematological profiles except for ESR which was 80 mm/in first hour. Electrolytes, PT, APTT, VMA, IVP and bone scan were within normal range, while X-ray chest and ultrasound revealed massive pleural effusion. Pleural tap was done. Report was of blood with suspicion of clumps of abnormal cells but on culture no organisms were found. Previous biopsy slides were again reviewed by Pathology Department of PIMS and were reported to be compatible with Ewing's sarcoma.

At Thoracotomy an organized haematoma like mass adherent to the pericardium, aorta and diaphragm was found in left hemithorax. Lung was also plastered to pericardium, diaphragm and to the mass. Biopsy specimen was reported to be a Fibrosarcoma. Report of the same slides in another laboratory was that of neural sheath tumor. In post operative period an ultrasound abdomen was repeated and a large ovoid mass, 10 x 9 cm in size, was found between spleen and left kidney. Same density mass was present in the lower left chest wall and upper pole of the left kidney.

Laparotomy was performed. A huge extraperitoncal tumour was found with a primary locus attached to three ribs while rest of the tumour consisted of blood and detached tumour mass. No obvious metastatic involvement of the abdominal organs was seen. The entire tumour, three involved ribs and adjacent chest wall muscles were removed. Biopsy reports from two laboratories were again different, in one it was fibrosarcoma and the other gave the report of synovial sarcoma.

DISCUSSION

Fibrosarcoma is the prototypical tumour of fibroblast[1]. They come under heading of soft tissue sarcomas, which are mesenchymal tumours arising from connective tissue elements and are grouped together due to their common biological behaviour. Common histologic types are fibrosarcoma, malignant peripheral nerve sheath tumours, haemangiopericytoma and malignant fibrous histiocytoma[2]. It is 5-10% of all sarcomas and is common in adults than children. Infantile or congenital fibrosarcoma are found in children of two years or younger[1,3]. This type of fibrosarcoma is histologically identical to fibrosarcoma in older children[3,4,5]. It is more common in retroperitoneal area and in the extremities[6]. Rare locations are trachea[5], lung and ovary[7]. It usually develops as a slow growing mass and may be present for 2-3 years prior to medical attention[2]. In some patients there is history as short as of 2-3 weeks or as long as 25 years. Pain is not a prominent symptom but a large tumour can be tender and can produce pressure symptoms[1].

It is softer, more friable and less circumscribed in children. Size varies from a few centimeters to more than 10 cm. Predominently, it has fibroblasts but few myofibroblasts are also present. Fibroblasts are also present in other soft tissue sarcomas while presence of myofibroblasts make it difficult to distinguish a fibrosarcoma from leiomyosarcoma or rhabdomyosarcoma[8,9,10]. Usually a small biopsy specimen is often misinterpreted. Even ample amount of specimen fails to give a definitive diagnosis if patient has a soft tissue tumour other than fibrosarcoma but with fibrosing pattern. Probably the same problem was encountered in our case in histological interpretation. Dependable techniques are immunohistochemical staining or electron microscopy, while magnetic resonance imaging is helpful in cases of retroperitoneal fibrosarcoma[11].

Grading levels vary from well differentiating, moderately differentiating and poorly differentiating to least differenti-

ating i.e. grade I, II, III and IV-Better the differentiation has better long term survival. Mostly fibrosarcoma, at the time of diagnosis, are of grade II, III.

Treatment is wide aggressive local excision[2,11,12]. Infantile fibrosarcoma is responsive to chemotherapy. Radiotherapy after surgical resection can aid in remission for incompletely resected tumours[2]. Metastasis is blood borne and in 25% cases it is present at the time of diagnosis. Lymph nodes are rarely involved. Recurrence occurs in more than half of the cases[2]. Childhood fibrosarcoma has more favorable prognosis than that of adults i.e. 85% and 5 years' survival rate is 60-80% with local excision[1]. Potential prognostic factors include grade, resection margins, size, location, histologic type and previous treatment with grade of margins being the most important[2].

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CONGENITAL LOBAR EMPHYSEMA

A CASE REPORT

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ABSTRACT:
Congenital lobar emphysema (CLE) is a rare surgical cause of respiratory distress in neonates. We are reporting a case of CLE involving right upper lobe in which upper lobe lobectomy resulted in prompt recovery.

KEY WORDS: Congenital lobar emphysema, Neonate, Respiratory distress.

INTRODUCTION:

Acute respiratory infection and respiratory distress in neonates and infants are common clinical problems, which readily improve with conservative management. If the condition becomes persistent or recurrent, one must rule out some underlying pathology pertaining to the respiratory system. Congenital lobar emphysema (CLE) though rare, should be considered as one of the important differential diagnosis in such cases. During the last two years, four such cases have been managed in the Department of Paediatric Surgery at Military Hospital, Rawalpindi. One of the recently operated cases is reported here.

CASE REPORT:

An 18 days old premature (28-week gestation) baby boy weighing 1.2 kg presented to the paediatric centre at Military Hospital with jaundice and fever of two days duration. He was dyspnoeic and cyanosed, running a temperature of 102.4°F. He was provisionally diagnosed as a case of neonatal jaundice with respiratory tract infection. Bilirubin estimation was 184.4 mmol/L and an X-ray of chest showed haziness on the right side. He was managed with parenteral antibiotics, incubator care and phototherapy. The patient's condition improved but he remained dyspnoeic and oxygen dependent. Jaundice settled gradually within a week after admission and repeat X-ray of the chest revealed marked emphysematous changes mainly affecting the right upper lobe with mediastinal shift to the left (Fig. 1). As the condition of the child showed no further improvement, surgery was planned considering the diagnosis of congenital lobar emphysema.

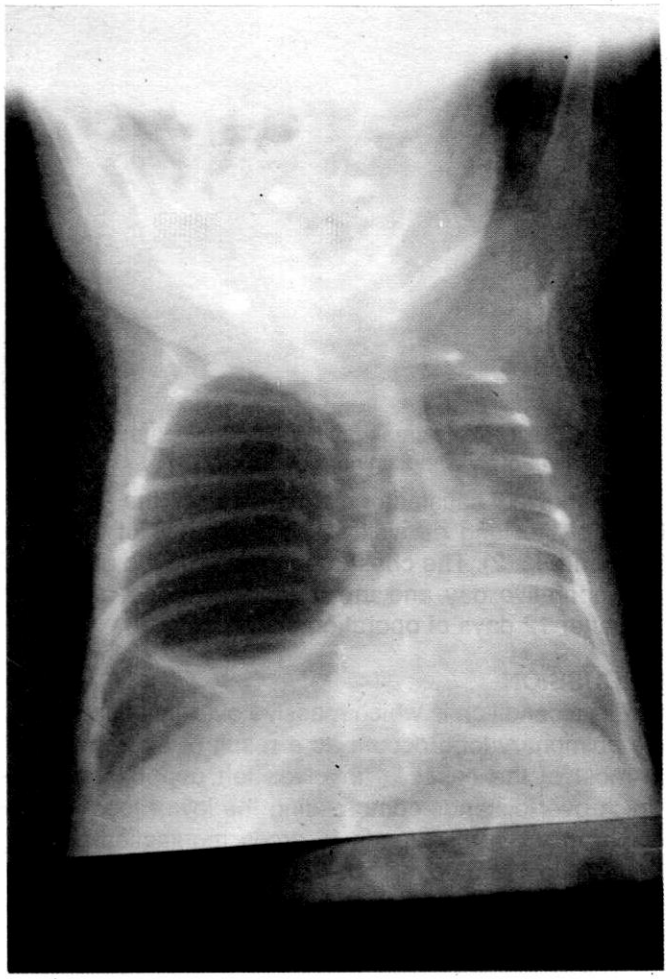

Figure 1 Showing marked emphysema involving the right upper lobe with mediastinal shift.

Right-sided thoracotomy through fourth intercostal space was done which revealed a massively distended right upper lobe of the lung, which bulged out of the wound as soon as the chest was opened. It was found to be compressing the middle and lower lobes of the lung with mediastinal shift. Right upper lobe lobectomy was carried out and chest closed with an underwater seal drain. Postoperatively, the child made an excellent recovery. He became oxygen non-dependent within 24 hours when an

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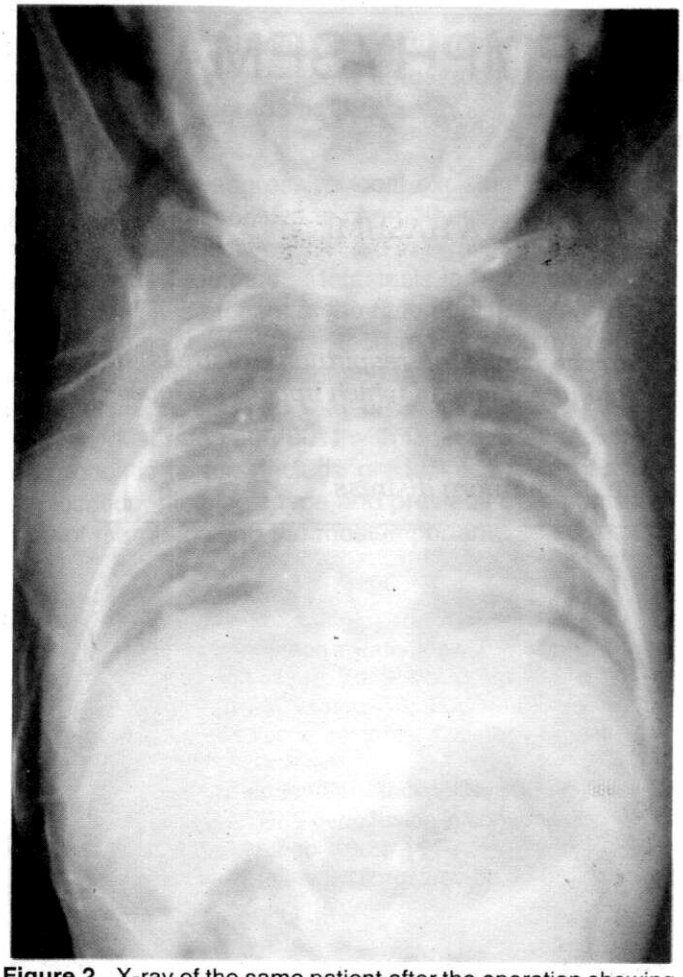

Figure 2 X-ray of the same patient after the operation showing normalization of the mediastinum.

X-ray showed satisfactory expansion of the remaining lobes of the lung as well as centralization of the mediastinum (Fig. 2). The chest tube was removed on the fifth post-operative day and the baby discharged, symptom-free after 12 days of operation.

DISCUSSION

CLE is a condition in which massive over-inflation of a single pulmonary lobe occurs as a result of air entrapment. In most of the cases, it involves left upper lobe (42%) which over-distends compressing the lower lobe and the diaphragm[1,2]. It also leads to gross mediastinal shifting. Right middle and upper lobes are less frequently involved (35% and 21% respectively)[1]. Bilateral or lower involvements are extremely rare.

Various theories have been put forward regarding the aetiology of CLE:

- Partial intrinsic bronchial obstruction occurs due to deficiency of bronchial cartilage (bronchomalacia) causing collapse of bronchi. The air enters the alveoli during inspiration and gets trapped. Such a cartilage deficiency is usually confined to one lobe.
- Complete obstruction occurs due to bronchial atresia. Ventilation of the atretic lobe occurs by collateral drift from the surrounding air spaces through the pores of Kohn during inspiration.

The nett effect of over-distended lobe is mechanical in nature. It compresses the normal lung tissue, displaces the mediastinum to the other side and impedes the exit of pulmonary secretions. Clinical presentation is a severe respiratory embarrassment. Attacks of cough, cyanosis, dyspnoea and fever are frequently repeated. Mediastinal shift leads to beady cardia or cardiac arrest. Rupture of the distended emphysematous lobe leads to pneumothorax.

Plain X-ray of the chest usually shows increased translucency on the affected side with adjacent lobes showing as small triangular shadows due to compression. Bronchovascular markings are vague[3] confusing it with pneumothorax. Failure of chest intubation to promptly relieve the symptoms should raise the suspicion of CLE[1]. If the condition of the child permits, investigations like bronchoscopy and bronchography should be considered. Bronchoscopy could have the added advantage of suction of mucoid secretions thus alleviating symptoms[4]. Sophisticated investigations like Xenon scan and computerized tomography are generally of not much help though the later could, in some cases, indicate the underlying aetiological factor[5]. Echocardiography can rule out cardiovascular problems if suspected.

Though hyperbaric oxygen, antibiotics and repeated intrabronchial suction have been found helpful in alleviating the acute crisis, surgical excision of the affected lobe is the only definitive treatment of CLE[6]. Surgery must be considered if the baby is symptomatic, the X-ray shows compression of the adjacent lobes or mediastinal shift, or the scan confirms emphysematous dead space. While removing the involved lobe, feeding bronchus must be carefully oversewn or stapled. Underwater seal drainage is essential. In cases of post-operative ventilatory embarrassment, the patient, who can not withstand surgery, one-stage Monaldi procedure with the introduction of catheter into the space followed by gradual decompression may be considered. The mortality of such a procedure is low but it has high recurrence rate.

The conditions which could mimic CLE include bronchogenic cysts (intra-pulmonary type), enterogenous cysts of the mediastinum, trilobed left lung, cystic adenomatoid lung malformation[7], pneumothorax, pneumatocele, congenital diaphragmatic hernia, pericardial cyst (coelomic cyst) and lymphangiectasia of the chest[1]. Conditions like birth asphyxia, congenital heart diseases and persistent great vessels causing extrinsic pressure over a bronchus could produce a diagnostic dilemma. Diagnosis

of CLE however, can be made fairly confidently considering the following points:

- Presentation is always in the neonatal period.
- Left upper lobe is most commonly involved. Involvement of lower lobe is extremely rare[1,2].
- Chest drainage with underwater seal fails to relieve the symptoms[1].
- Biopsy shows respiratory epithelium in the wall.
- The condition is not generally associated with other congenital anomalies[1].

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OMPHALOCELE MAJOR : CONSERVATIVE MANAGEMENT

A CASE REPORT

ANWAR SAEED KHOKHAR, NAEEM-UZ-ZAFAR KHAN

ABSTRACT:
In our community, majority of deliveries are at home and most have no intra-uterine fetal monitoring. Many congenital anomalies, including omphaloceles, are diagnosed after birth. Almost all such cases are transported to health facilities, wrapped in dirty clothing, and are heavily contaminated with established sepsis. Even in tertiary centers like ours, resuscitative and ventilatory facilities have several limitations. Under these circumstances, we have devised a line of management on conservative lines and in stages, for contaminated omphalocele major. This seems to offer the best chance of survival to the infants[1]. The present report is of three children presented at the Children's Hospital PIMS, Islamabad. Their mode and state of presentation and method of management are discussed, which highlights several important features of this condition in our set-up. A review of literature is also presented.

KEY WORDS: Omphalocele Major, Management.

INTRODUCTION:

Omphalocele is a membrane covered defect of the umbilical ring into which various abdominal contents herniate[2,3]. The sac consists of an outer layer of amnion and an inner layer of peritoneum. The incidence is 1 in 5000 live births, females are affected more than males[4]. Giant omphaloceles present special problems in management. They may result in respiratory insufficiency due to restricted chest structure[5,6].

CASE REPORT:

CASE #1

A baby was born with a broad-based large omphalocele through a semi-transparent amniotic membrane, the entire liver and much of the intestinal contents were visible. Abdomen was scaphoid and there was no associated abnormality. Operative repair was not possible, therefore, conservative management with application of silver sulfadiazine, alternating with painting the sac with mercurochrome was adopted. The patient was fed enterally. Gradually, coverings of the sac were replaced by epithelialized skin (Fig 1).

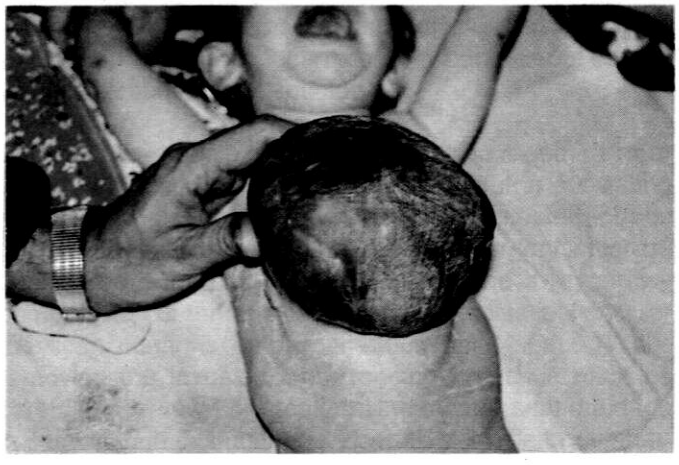

Figure 1 Very large omphalocele placed more near the epigastrium, being treated with application of silver sulphadiazine alternating with merchurochrome solution. Covering membranes are now fairly formed.

For succeeding 8 months, adhesive strappings were applied around the body in such a manner so as to return the viscera to the abdominal cavity. At the age of 3 years, surgical repair was performed. Liver was placed in the subcostal space and other viscera were also returned to the abdominal cavity. We were able to approximate the rectus sheath (Fig 2).

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CASE #2

A male baby presented with a narrow-necked ruptured omphaloceles and a reasonably developed abdominal cavity (Fig 3a). He presented with symptoms and signs of intestinal obstruction and contaminated intestinal contents, glued to each other, having been bathed in amniot-

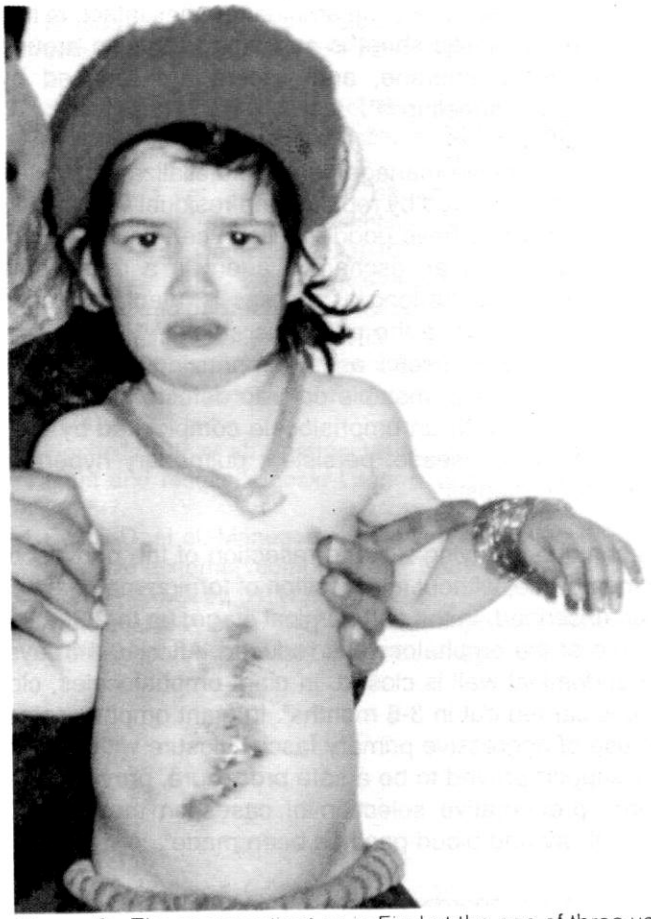

Figure 2 The same patient as in Fig-I at the age of three years having her ventral hernia operated. Appearance is ten days after surgery.

ic fluid in the intra-uterine period. This child, after resuscitation, was operated to return the sac contents into the abdominal cavity and the narrow umbilical defect was easily closed. In the postoperative period, the patient had a severe course, with evidence of septicemia and disseminated intra-vascular coagulation and was managed for the complications with broad-spectrum antibiotics, fresh-frozen plasma and replacement of fluids and electrolytes. Eventually, he recovered and was discharged 3 weeks after admission.

CASE #3

This patient (Fig. 3b) had a broad-based moderately large omphalocele placed more in cephalad with the umbilicus situated on the inferior aspect of the sac. The covering membrane was dry, hard and with a somewhat hide-like appearance. He was treated with application of mercurochrome and after a week we were able to discharge him, with the mother having been advised to continue cleanliness and application of mercurochrome. Gradually, epithelialization and escharing resulted in a reasonably small ventral hernia, which was easily repaired at the age of 18 months.

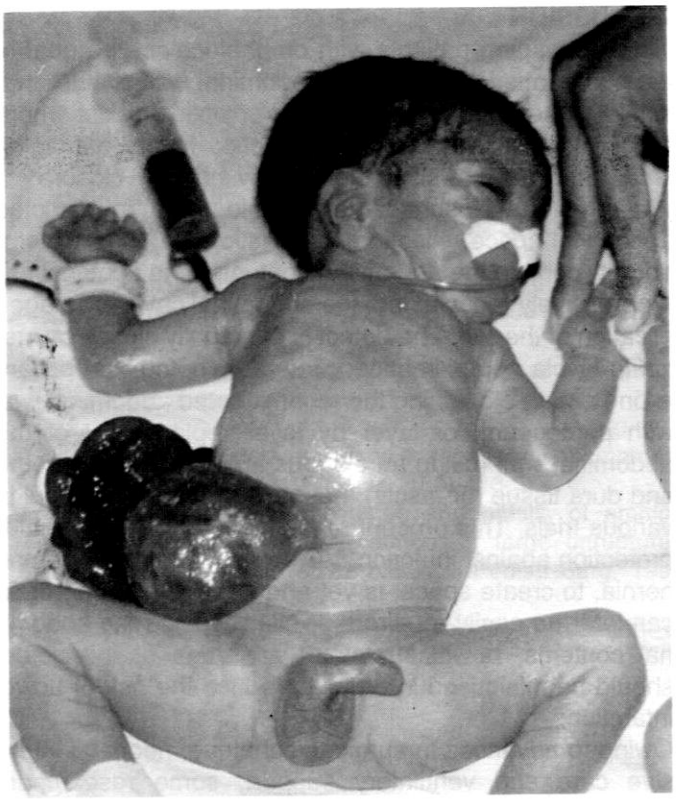

Figure 3a Ruptured narrow necked omphalocele had to be operated urgently. Abdominal cavity being adequate, contents were easy to replace.

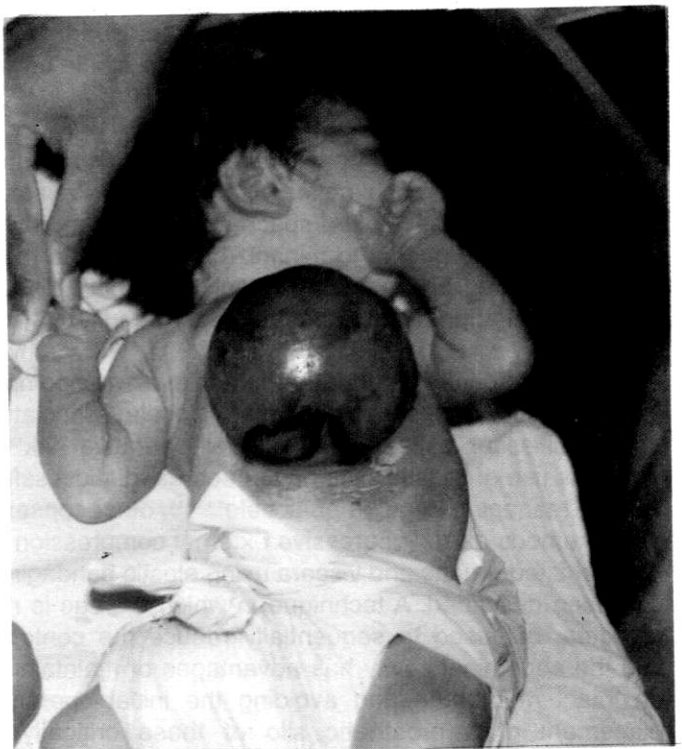

Figure 3b Broad based omphalocele with thick coverings treated conservatively with application of merchurochrome followed by srugical repair of ventral hernia at the age of 2_ years.

DISCUSSION

While managing patients with omphaloceles, the goal of the surgeon is to accomplish abdominal wall closure in a single stage. However, a number of options exist where this is not possible[7,8]. Current practice favors managing small and medium-sized defects by primary closure[4,8,11]. Where primary closure is not possible, owing to restricted abdominal space, silastic sheets (silo) are used to temporarily contain the abdominal contents. The contents are progressively reduced into the abdominal cavity by staged plication of the silo. The defect is eventually closed by fascia-to-fascia approximation, preferably before the patient is one month old. Lining the reconstructed abdominal wall with peritoneum, or layer by layer replacement of the abdominal wall (using autologous amnion for peritoneum and dura tissue for fascia), has also proved successful in various trials. This procedure is claimed to afford greater protection against infection[8,9]. Closure with a small ventral hernia, to create space, is yet another option. The hernia can later be easily repaired[4]. While reducing the abdominal contents, bowel stretch at the edge of the defect should be minimised in order to reduce the risk of bowel infarction.

Owing to advances in surgical technique, neonatal intensive care and ventilatory support, some researchers believe that primary fascial closure is superior to staged procedures, with higher survival rates[6,12], provided the facilities exist. Experience suggests that ventilatory assistance is mandatory per- and post-operatively. Handling of these abdominal wall defects demand transport in an incubator with a nasogastric tube in place, a sterile bowel bag and replacement of fluid loss[13].

Management of a giant omphalocele remains a major surgical challenge. In such cases, the infant has a small abdominal cavity with limited space for the herniated viscera[4,14,15]. Primary goal is to minimize morbidity and mortality by creating an optimum protection of the exposed viscera. Ideal approach has not yet been found[15].

A staged approach is mandatory to achieve an uncomplicated reduction in cases of giant omphalocele, associated abnormalities or patients with a poor operative risk[16,18]. Whereas use of silastic silos have been used successfully while managing large omphalocele[3,4,10,16], other conservative methods exist. Progressive external compression of the herniated organs and viscera using elastic bandaging, has been described. A technique in which the sac is not resected, but used to sequentially reduce the contents into the abdominal cavity has advantages of maintaining an intact membrane and avoiding the initial operative placement of a prosthetic silo of these critically ill patients[19,20]. Many surgeons remove the sac to evaluate intra-abdominal viscera for possible bowel atresias, vitelline duct anomalies, or other intra-abdominal defects[4]. Large, unruptured omphaloceles may be treated by amnion inversion, where the amnion remains intact. In this procedure, a silastic sheet is sutured to the skin around the amniotic membrane, and viscera are reduced by squeezing the sheeting[18,21].

Initial nonoperative management (epithelialization) of the omphalocele followed by repair of the residual ventral hernia, has shown to have good results in certain trials. Topical application of an escharotic agent is a reasonable treatment choice. As long as the sac is intact, operation can be delayed once the patient is stable[1,4,10,16,22]. Topical treatment is also useful as a temporizing measure in infants with severe unstable cardiac defects and in premature infants with an omphalocele complicated by hyaline membrane disease, persistent pulmonary hypertension, and/ or sepsis[4].

A technique involving 2-stage resection of the nonvascular membrane, without interposition of foreign material has been described. In the first surgical stage, up to 2/3 of the volume of the omphalocele is reduced. After 10-14 days, the abdominal wall is closed. In giant omphaloceles, closure is carried out in 3-6 months[3]. In giant omphaloceles, the use of aggressive primary fascial closure with ventilatory support proved to be a safe procedure, provided that proper preoperative selection of cases on the basis of chest X-ray and blood gas has been made[6].

Conservative approaches result in prolonged hospital stay, the possibility of local infection, sepsis, and rarely, late volvolus of the stomach[3,4,22]. With regular use, local applications may rarely give rise to complications, such as hypothyroidism caused by topical povidon-iodine, mercury poisoning and alcohol intoxication were observed. In early years, one child was lost due to mercury poisoning.

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