



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2015; 1(12): 315-321
www.allresearchjournal.com
Received: 07-09-2015
Accepted: 10-10-2015

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Conservative approach in management of chronic empyema-in a tertiary care centre

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Abstract

Background- We Tried To Find Out The Clinical Profile Of Chronic Empyema And Its Best Approach To Treat This Disease Entity.

Aims And Objectives- Irrigation via thoracostomy tube of empyema cavity to remove the debris from the pleural space. An approach to prevent extensive surgical operations: e.g. in early tuberculous empyema. To maintain or improve the vital capacity of the encompassed lung by chest physiotherapy. To assess the role of fibrinolytic agents in prevention of chronic empyema.

Material and Methods- The study was carried out in the department of surgery, G.R. Medical College period of 1 YEAR (2011-12) We had studies all patients of chronic empyema admitted during the above mentioned period randomly of all age, Sex, religion, S/E Status and other disease groups. The selection of patient was based on clinical suspicion of empyema thoracis but the diagnosis was always confirmed by radiological and laboratory (including bacteriology) investigations. All the patients were hospital. Some of the patients were referred cases from TB HOSPITAL OF GRMEDICAL COLLEGE GWALIOR with or without chest tube in situ. A detailed history was taken, routine and diagnostic investigations were done.

Results- Empyema thoracis was found more commonly in elderly people and preschool children than young adults. Males were affected 4 times as compared to females. Hindus were affected more than other religions possible due to there greater number. Labourers were common victims of empyema. Next to labourers preschool children were commonly affected. The incidence was common in low socio economic status. Higher incidence was found in left side. Duration of Hospital stay was more in patients who admitted with longer duration of symptoms. The common presentation was chest pain, fever, weight loss, wet cough with sings of dull percussion note. anemia, emaciation and chest wall deformity. Family History of PTB was present in 24% of he cases. Majority of patients were either completely immunized or partially immunized in there childhood. The common presentation was of Sub Total unilateral Empyema. Pyogenic empyema was found more number of cases than tubercular, post traumatic and amoebic. Daily irrigation with normal saline and Betadine lotion (week) was found to be effective in about half of the cases. Mortality in this series was 4% all were adults. Lower mortality was seen in children.

Conclusion- Daily irrigation with normal saline and Betadine lotion (week) was found to be effective in about half of the cases.

Keywords: Chronic Empyema, Intercoastal Tube Drainage, Conservative Management

Introduction

Few discreditable chapters are to be found in history of modern medicine than the treatment of empyema thoracic. It is recognized by all thoracic surgeons that a closed pleural space and its contents provide an ideal incubator and culture medium in which bacteria can thrive and if any how bacterial infection of thoracic cavity takes place, empyema will occur, regardless of any measure that can be taken to prevent it. Thus empyema is one of the more distressing and tragic sequelae of the intra-thoracic sepsis, which gives rise to shortened life span of chronic invalidism^[1].

About a century ago Stop her Paget (1896) Wrote in this connection that on might add a score of cases to show that an unhealed empyema is as a rule, the direct result of patients neglect, or of the surgeons delay or of inadequate and useless surgery; but our business now is to enquire how we may most surely and safely and conservatively cure it^[2].

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The term empyema is synonym for the abscess, and empyema thoracic is pus in pleural cavity. Usually this term is also extended for the septic pleural effusion in which the straw coloured pleural effusion does not look frankly purulent but contains bacterial organism and predominant polymorph cells [3].

The advent of chemotherapy has in many ways changed the whole face of pleural infection. But though drainage and chemotherapy may eliminate the toxic elements of the infection, they do not on their own accord obliterate the abscess cavity, because of its rigid walls. This persistent dead space or cavity has to be observed during the whole process of its closure [4].

Though with the advent of chemotherapy the incidence of empyema complicating pneumonia is declining, but in India empyema in association with tuberculosis, amoebiasis, lung abscess and bronchiectasis are still more common. The empyema secondary to malignancy is increasing day by day. Post traumatic empyema are also found in fair numbers. Now the post operative empyema have become important entities with the increase in the frequency of operations performed on the chest [5].

The present work in presentations of what we believe the most rational and somehow difficult "Conservative approach in management of chronic empyema". I also hope that it will represent the most productive approach towards the prevention of chronic phase of this disease.

Aims and Objectives

Our aim is to approach newer conservative line of management of chronic empyema:

- Irrigation via thoracostomy tube of empyema cavity to remove the debris from the pleural space.
- An approach to prevent extensive surgical operations: e.g. in early tuberculous empyema.
- To maintain or improve the vital capacity of the encompassed lung by chest physiotherapy.
- To assess the role of fibrinolytic agents in prevention of chronic empyema.

Material and Method

The study was carried out in the department of surgery, G.R. Medical College period of 1 YEAR (2011-12) we had studied all patients of chronic empyema admitted during the above mentioned period randomly of all age, Sex, religion, S/E Status and other disease groups. The selection of patient was based on clinical suspicion of empyema thoracis but the diagnosis was always confirmed by radiological and laboratory (including bacteriology) investigations. All the patients were hospital. Some of the patients were referred cases from TB HOSPITAL OF GRMEDICAL COLLGE GWALIOR with or without chest tube in situ. A detailed history was taken, routine and diagnostic investigations were done.

1. Clinical examination

The age, sex, occupation, address, marital status and socioeconomic status were recorded.

Symptoms

- # Chest pain- side of pain, localized or generalized.
- # Fever - Continuous or intermittent. low grade or high grade.
- # Dyspnoea - Grade of dyspnoea

- # Cough - Dry or productive
- # Sputum - Quantity, color and smell.
- # Haemoptysis - Frank blood, or simply stained sputum, amount of blood.
- # Loss of weight - Insidious or rapid
- # Ankle Oedema - With its duration
- # Discharging sinus - The site of the sinus, nature and amount of discharge.
- # Swelling of the chest wall

Past Illness -History of pulmonary infection, upper respiratory tract infection and pulmonary tuberculosis was obtained.

Family History -History of tuberculosis was elicited.

History of Operation -History of pleural aspiration, intercostal tube drainage, thoracostomy, pneumonectomy was obtained.

History of Trauma -The nature of injury (blunt injury, penetrating, injury).

Physical Examination -Detailed general and systemic examination were made in each case.

General Examination -General appearance of the patient, presence of anaemia, cyanosis, clubbing, loss of weight, ankle oedema, emaciation and temperature.

C.V.S.-Pulse, jugular veins, heart and blood pressure recording were made.

Respiratory System

1. **Chest Wall:-** Symmetrical or asymmetrical, flattened or not, presence or absence or any scoliosis.
2. **Sinus:-** Presence or absence of any discharging sinus, site, side, character and amount of discharge.
3. **Scar Mark:-** Side, site and size.
4. **Trachea:-** Central, right, left.
5. **Respiratory Movement:-** The movement of the chest during the respiration, restriction of respiratory movement.
6. **Percussion:-** Dullness on percussion due to presence of pleural fluid.
7. **Vocal Fremitus:-** Diminished or absent.
8. **Auscultation:-** Diminished or loss of air entry, character of breath sounds and accompaniments.

Investigation -Following investigation were done:-

1. **X-ray Chest**-Lateral and posterior - anterior views of chest were taken to know the side of empyema, was it a total or localized, presence or absence of air and condition of underlying lung.
2. **Aspiration**-After clinical and radiological diagnosis of pleural effusion, aspiration was performed to detect the nature, consistency, colour and smell of fluid in pleural cavity. Pus aspirated out or collected from chest tube or discharging sinus was examined for:
 - (a) Pyogenic Organisms
 - (b) Acid fast bacilli
 - (c) Examination for Entamoeba-histolytica, fungal infection actinomycotic infection.

3. **Blood Examination**-Hb., total leukocyte count, differential leukocyte count, erythrocytic sedimentation rate.
4. **Sputum Examination**-Nature, quantity, colour and smell of the sputum and also for pyogenic organism, acid fast bacilli, malignant cells.

The materials used in our study

1. Patients of all age group and sex.
2. The Chest Bag:- This is the water sealed drainage system made up of polythene bag having total capacity of 1000 MI and initial water level with the capacity of 50 MI. It is sterilized by E.T.O. gas.
3. Tube Drain:- Malecot's catheter.
4. Other instruments:- Artery forceps, trocar and cannula, needle holder, B.P. knife, scissors etc.
5. Incentive Spirometer: The thoracotomy was done in most depended part of the cavity in posterior axillary line in most of the cases.

The result of treatment was evaluated by

- a. Serial skinagram of chest = AP and lateral view during pre-irrigation and post-irrigation period.

Few important X-rays with their results will be described later on. During whole period, daily irrigation of empyema cavity through chest tube by weak betadine lotion and normal saline were done till three weeks under strict aseptic precautions. The results were evaluated after three weeks by radiological examination and respiratory function tests. Pus culture and sensitivity was done on every 7-10 days duration and antimicrobials were used accordingly. Respiratory function test were evaluated in pre-irrigation and post-irrigation period. Better results were seen during post-irrigation group in about half of the cases. Active and passive chest physiotherapy with the help of incentive spirometer and physiotherapist done during the whole period.

The results have been taken as "Positive", who had improved clinically, with decreasing amount of discharge, expansion of lung on x-ray and improved respiratory function test and "Negative" who had not improved/or underwent either thoracotomy and/or decortication. The overall outcome of the method will be described alter on.

Technique of Intercostal Catheterization -I.C.C. or thoracostomy was done under all aseptic precautions.

Position of the patient:-Semi-reclining with arms folded.

Anesthesia: L.A./G.A. in children.

Site of L.A.:-In most of the cases it was 7th ICS in posterior axillary line.

Procedure-After preliminary painting and draping local infiltration of xylocaine 2% solution was done. About half an inch long incision was made in the space concerned, and deepened to pleura and a nick was made in it. Wound was dilated with artery forceps and malecot catheter of adequate size was introduced with the help of introducer in the direction of opposite shoulder tip. Catheter was further secured with a skin stitch. During this procedure, no air was allowed to enter into the pleural cavity. The outer end of catheter was clamped before introducing into the cavity. The

lower end of tubing was connected to water seal chest bag. Now clamp was released and pus allowed to drain in chest bag.

Observations-The material studied consisted of series of 45 cases of chronic empyema thorecis, who were admitted and treated during the last 2 years in Department Of Surgery Of G.R. Medical College Gwalior.

Age incidence: In this series, the age incidence of empyema varied from 6 months to 70 years. The average age was 26.7 years as shown in table No. 1. The highest incidence was found in 0 to 10 years age group, and the lowest incidence in 41-50 year age group.

Table 1

S. No.	Age Group	No. of Cases	Percentage (%)
1	0-10	09	20%
2	11-20	06	14%
3	21-30	06	13%
4	31-40	06	13%
5	41-50	02	04%
6	51-60	10	22%
7	61-70	06	13%
Total		45	100%

Sex incidence: In present series of 45 cases, males were affected four times than females. As shown in table no. 2 the sex incidence was found 82% in males and 18% in females.

Table 2: showing the sex incidence

S. No.	Sex	No. of Cases	Percentage (%)
1	Male	37	82%
2	Female	08	18%

Religion incidence: In present series of 45 cases, Hindus were affected more than Muslims, Christians and Jeuze. The incidence was found 75% in Hindus, 22% in Muslim and 2% in Christians.

Table 3: showing the incidence of religion

S. No.	Religion	No. of Cases	Percentage (%)
1	Hindu	34	75%
2	Muslims	10	22%
3	Christian	01	02%
4	Jeuze	00	00%

Incidence of occupation and nature of work: The empyema was found in patients of different occupation. The labourers were affected more than the other occupations. As shown in table incidence was labourers 40%, pre school age - 20%. In other occupation it was less common.

Table 4: showing the incidence of empyema in different occupations

S. No.	Occupations	No. of Cases	Percentage (%)
1	Labourers	18	40%
2	P.S.A.*	09	20%
3	Govt. Servant	05	11%
4	House wife	05	11%
5	Famer	04	08%
6	Students	04	08%

* Pre school age

Incidence of socio-economics status: The empyema was found more commonly in patients of low S/E status. Out of 45 cases 78% were belonged to low S/E status, 20% from medium and 2% from high S/E status.

Table 5: showing the incidence of different S/E status

S. No.	S/E Status	No. of Cases	Percentage (%)
1	Low	39	78%
2	Medium	10	20%
3	High	01	02%

Incidence of duration of hospital stay: The cases studied in two years, the minimum duration of hospital stay was 18 days, maximum was 190 days and the average was 45 days.

Table 6: showing incidence of duration of hospital stay

S. No.	Duration of Stay (Months)	No. of Cases	Percentage (%)
1	<1	12	26%
2	1-2	23	51%
3	2-3	07	15%
4	>3	03	06%

Incidence of duration of symptoms (Complaints): In series of 45 cases of chronic empyema there was variation in duration of symptoms from few weeks to more than four months. Maximum (29%) patients had complaints of less than two weeks and minimum had less than 3 months duration.

Table 7: incidence of duration of symptoms

S. No.	D/Symptoms (in months)	No. of Cases	Percentage (%)
1	0-0.5	13	29%
2	0.5-1	11	26%
3	1-1.5	03	06%
4	1.5-2	08	18%
5	2-2.5	01	02%
6	2.5-3	04	08%
7	3-3.5	01	02%
8	3.5-4	02	04%
9	More than 4	02	04%
Total		45	100%

Clinical features

Symptoms: On detailed clinical survey of every case it was found that most of the cases of empyema presented with chest pain (96%), fever (93%), loss of weight (89%), and wet cough (85%), most of which were tubercular.

Signs: In our study of 45 cases in last two years, most of the patients had anemia (96%), dull percussion note (96%), emaciation (89%), Mediastinal shift (67%) and chest deformity was present in (77%) cases.

Table 8: showing the clinical features

S. No.	Clinical features (Symptoms)	No. of Cases	Percentage (%)
1	Chest pain	43	96%
2	Fever	42	93%
3	Weight loss	40	89%
4	Wet cough	38	85%
5	Difficulty in breathing	26	58%
6	Haemoptysis	6	14%

Table

S. No.	Clinical features (sign)	No. of Cases	Percentage (%)
1	Dullness on percussion	43	96%
2	Anemia	43	96%
3	Emaciation	40	89%
4	Mediastinal shift	30	67%
5	Chest deformity	35	77%
6	Trachial shift	21	50%
7	Dyspnoea	16	36%
8	Clubbing	7	16%
9	Others	10	22%

Others: Ankel oedema, empyema necessitate, swelling over chest wall.

History of past illness-As shown in table no. 9, in history of past illness, PTB was most commonly present in 31% of the cases.

Table 9: showing the incidence of past illness

S. No.	Past illness	No. of Cases	Percentage (%)
1	PTB	14	31%
2	Blunt trauma chest	11	25%
3	ARI	02	04%
4	Pneumonia	01	02%
5	Pneumo thorax	01	02%

History of operation

As shown following table there was history of operation in 15 cases. Out of which 13% had previous aspiration, 4% had history of incision and drainage of chest abscess and 15% had history of previous thoracostomy.

Table 10

S. No.	H/o operations	No. of Cases	Percentage (%)
1	Thoracostomy	07	15
2	Aspiration	06	13%
3	I & D of chest abscess	02	04%

Family history

Out of 45 cases of Emphyema the family history of tuberculosis was found in 11 (24%) and D.M. in 1 (2%) case.

Table 11

S. No.	Family history	No. of Cases	Percentage (%)
1	P.T.B.	11	24%
2	D.M.	01	02%

History of immunization

In series of 45 cases, only 20 (45%) patients were completely immunized, 15 (33%) were not immunized and 10(22%) were partially immunized.

Table 12

S. No.	H/o Immunization	No. of Cases	Percentage (%)
1	C.I.	20	45%
2	N.I.	15	33%
3	P.I.	10	22%

Side of Emphyema-In series of 45 cases left sided empyema was found in 26(52%), right sided in 22 (44%) and bilateral in 2(4%). Left sided empyema was more common.

Table 13

S. No.	Side	No. of Cases	Percentage (%)
1	Left	25	56%
2	Right	18	41%
3	B/L	02	04%

Incidence of Extent of empyema -We found subtotal (localized) empyema in 33 (74%) and total empyema in 12(26%) of the cases.

Table 14

S. No.	Extent	No. of Cases	Percentage (%)
1	Subtotal (Localized)	33	74%
2	Total	12	26%

Investigation-During the period of study I have done many investigations for empyema thoracic were done. Routine investigation included hemogram, X-ray chest A.P. and lateral view, pus culture and sensitivity and respiratory function test and many other special investigations.

Table (a) 15: Showing the incidence of routine investigation

S. No.	Routine investigation	No. of Cases	Percentage (%)
1	Leucocytosis	45	100%
2	↓ Hb	44	98%
3	↑ ESR	24	53%

Table (b): Bacteriological examination

During the period of two years, pleural pus culture and sensitivity was done in 40 (89%) cases of chronic empyema. I have divided this examination in two groups, pre irrigation and post irrigation. In pus Culture of the 40 patients, E. coli and S. Aureus were found in most of the cases of empyema thoracis (28-32%).

In this study, the most common antibiotics sensitive to above organism were netilmicin (22-26%), Amikacin (16-20%) and Kanamycin (28-30%) of the cases. There was no growth in pre irrigation group in (4-6%) and the pus was sterile in (25-28%) of the cases of post irrigation group.

Table: Pleural pus culture

S. No.	Pus culture (Pre irrigation)	No. of Cases	Percentage (%)
1	E.coli	14	31%
2	S. Aureus	13	29%
3	P. Pyo.	03	06%
4	S. Viridance	03	09%
5	P. Vulgaris	02	04%
6	Mixed group	02	04%
7	No growth	02	04%

Table: Pleural pus culture

S. No.	Pus culture (Post irrigation)	No. of Cases	Percentage (%)
1	E. Coli	13	30%
2	No growth	13	33%
3	P. Pyro	08	20%
4	S. Aureous	04	10%
5	P. Vulgaris	02	05%

Table: Pleural pus sensitivity

S. No.	Pus sensitivity (Pre irrigation)	No. of Cases	Percentage (%)
1	Kanamycin	12	30%
2	Netilmicin	11	28%
3	Amikacin	08	20%
4	Vancomycin	05	13%
5	Penicillin	04	10%
6	Ceftriaxone	01	02%
7	Cloxacillin	01	02%

Table: Pleural pus sensitivity

S. No.	Pus sensitivity (Post irrigation)	No. of Cases	Percentage (%)
1	Anujacob	11	27%
2	Netilmicin	09	24%
3	Vancomycin	03	09%
4	Kanamycin	01	02%
5	Gentamycin	01	02%

Note: (In 15 (38%) of cases, pus was sterile.

Table (c): X-ray chest PA and lateral view

Table No. 15(c) demonstrate the findings of x-ray chest examination in 45 cases of empyema studied.

Out of 45 cases, all have gone through the x-ray chest examination at the interval of 7 to 10 days, following pre irrigation and post irrigation groups. Pleural thickening with partial collapse of lung with pyopneumothorax was seen in 15(34%), Mediastinal shift along with pleural thickening with partial collapsed lung with pyopneumothorax in 6 (14%), mediastinal shift with hydropneumothorax with complete collapse of same side of lung in 5(12%) and complete opaque hemithorax in 3(06%) of the cases. The other findings are summarized in the following tables:

Table: showing x-ray finding during pre irrigation

S. No.	X-ray findings (Pre irrigation)	No. of Cases	Percentage (%)
1	03	15	34%
2	1,3	06	14%
3	1,4	05	12%
4	06	03	06%
5	1,2,3	02	04%
6	1,2,6	04	08%
7	4	02	04%
8	3,9	02	04%
9	5,8	01	02%
10	1,5	01	02%
11	1,6	01	02%R
12	1,2,3,8	01	02%
13	3,8	01	02%
14	5	01	02%
Total		45	100%

1. Mediastinal shift to opposite side
2. Tracheal shift to opposite side
3. Evidence of pleural thickening with partial collapse of lung with pyopneumothorax.
4. Hydropneumothorax with complete collapse of same side of lung.
5. Hydropneumothorax with partial collapse of same side of lung.
6. Lower opaque hemithorax.
7. Lower lobe effusion.
8. Active B/L PTB

- 9. Active U/L PTB
- 10. Interlobar encysted effusion with thickened pleura.
- 11. B/L effusion.

Table: X-ray chest (post irrigation)

S. No.	X-ray chest (Post irrigation)	No. of Cases	Percentage (%)
1	>75% improved	11	25%
2	51-75% improved	09	20%
3	26-51% improved	00	00%
4	0-25% improved	01	02%
5	Not improved	24	54%
Total		45	100%

Table (d): Respiratory function test

The study was done in 45 cases of empyema out which 40 (80%) cases had done R.F.T. The main functions done, were vital capacity and respiratory minute volume. R.F.T. (Pre irrigation group): During pre-irrigation all 40(100%) patients had decreased R.F.T.

Table: During post irrigation 50% of the cases had improved R.F.T. rest 50% had not improved.

S. No.	R.F.T. (Post irrigation)	No. of Cases	Percentage (%)
1	Improved	20	50%
2	Not improved	20	50%

Out of 5 patients who had not done RFT's 4 were not fit for transportation and 1 absconded. Incidence of number of chest tubes: in series of 45 cases, CT were put in all 45 cases. Out of which 33 (74%) patients have one tube and 12(26%) have two tubes.

Table 16

S. No.	No. of CT	No. of Cases	Percentage (%)
1	One	33	74
2	Two	12	26%
Total		45	100%

Treatment

In series of 45 cases our approach was to improve empyema thoracis conservatively by thoracostomy tube irrigation with normal saline and Betadine lotion daily. We used different types of antimicrobial therapy during whole duration of illness,

Table 17 a: Showing frequency of different antimicrobials used

S. No.	Antimicrobials	No. of Cases	Percentage (%)
1	ATT	38	85%
2	Antibiotics	45	100%

Table 17 b: In series of 45 patients thoracotomy and decortications was done in 6 (14%) cases, due to failure of conservative treatment of improper drainage or patient's willing for operation.

S. No.	Total number of cases	No. of Cases	Percentage (%)
1	45	06	14T

Showing outcome

Out of 45 cases 20(44%) were improved, 18 (40%) were not improved, 03(06%) absconded, 02 (04%) were L.A.M.A. and 02 (04%) were died.

Table 18

S. No.	Outcome	No. of Cases	Percentage (%)
1	Improved	20	44%
2	Not improved	18	40%
3	Absconded	03	06%
4	LAMA	02	04%
5	Died	02	04%

Discussion

In various studies incidence of empyema thoracis varies in different ages, one study [6] shows maximum incidence in 20-40 years age group, while other [7] shows in age group 50-60, in our study maximum patients were present in age group 51-60 years. Males were more commonly affected than females in VARIOUS [6, 7] series, Present series consists of 82% male patients and this tends to agree with others series. The males are more predisposed to infection as they go out for work and also meeting other people at social occasions. They lead their life full of stress and strain. While females live in homes and most of them are unemployed. The incidence of empyema thoracis varies in different occupations. ONE STUDY [8] found maximum incidence in farmers (32%) followed by house wives (21%) and students (21%).The incidence in present series is higher in labourer (40%) followed by P.S.A. (20%) and house Wives. Higher incidence in labourers were probably d/t they belong to low S/E status. Poor nutrition and more chances of respiratory infection. In Previous Study [6] the variation in duration from 2 months to 2 years, with maximum incidences in 4-6 months duration. Another Study [8] found variation in duration from few days to 8 months. The higher incidence was found in 2-4 months duration. Majority of cases in present series came in duration since 1-2 months. Some had symptoms for more than 1 years. Peak incidence in present series tends to different from other workers but general figures are comparable. Most of the patients attends late in hospital as they are seen by unqualified general practitioners in early stages of disease. In our series left side is involved in (56%) cases as compared to right side (41%). Two case had bilateral empyema these finding are identical with both Previous Studies [6, 8] One Study [8] found the incidence of total empyema to be 75% as compared to sub total or localized empyema which occurred in 25% cases. In our series total empyema was seen in 26% cases and ST. In 74% cases. The higher incidence of sub total empyema was d/t early onset of involvement of parietal pleura causing pain and some how early reporting to the hospital. Past Study [6] found sings of sepsis in form of emaciation. Weight loss anemia. Besides this most of their patients had chest pain. Fever and cough with expectoration. Dyspnea was also a common complaint and was seen more frequently when there was associated staphylococcal pneumonia or lung absences especially in infants. Another Study [9] also found dyspnoea to be present in almost all the children in a series of 30 cases. Other Study [10] found higher incident of hemoptysis in patients with tuberculosis empyema. Empyema necessitates and discharging sinuses were found in patients with long standing disease Besides this there were signs of fluids in pleural cavity in the form impaired movement of the chest, stony dullness, absent or

reduced breath sound, mediastinal and tracheal shifting. In present series signs of sepsis were present in most of the cases, with respiratory symptoms in form of cough, expectoration, chest pain and dyspnea, which tends to agree with Previous

Studies.

Hemoptysis in this series was seen in 14% cases, all of which had tuberculosis pathology in lung. This is comparable to finding of Past Study [11]. Other findings were evidence of fluid in the pleural cavity (100%), shifting of mediastinum (67%) shifting of trachea (50%) These findings are comparable with Previous Study [8]. In the pre-antibiotic era pneumococcal and streptococcal empyema were most frequent offending organism in pleural empyema. With the advent of penicillin, the incidence of pneumococcal and streptococcal empyema was reduced and staphylococcus became more common etiological agent. Now with the variety of available anti-staphylococcal drugs, gram negative organisms are causing pleural space infection with increasing frequency [12]. In present series pus culture was positive in 96% cases out of which staphylococci were present in 29% pseudomonas in 06% proteus vulgaris (04%) and E. Coli (31%). Mixed culture was obtained in 4% cases. Treatment of empyema is essentially operative in most of the cases. We treated empyema as intercostal drainage in all 45 cases.

Total duration of hospital stay with his method was 1-2 months (average 37 days) Thoracotomy and Decortication was required in 6 (14%) In present study, the mean duration of hospital stay was 38 days in our method of irrigation of empyema cavity with normal saline and weak Betadine lotion. These findings in present series are comparable with Past Study [13]. In present series there were (04%) deaths.0% in children. Out of 2 deaths, one was admitted with acute respiratory distress and high fever and one case had encysted empyema with large broncho-pleural fistula developed on 96th day of tube thoracostomy.

Mortality in present series is comparable with Previous Studies [14, 15] the reason for no mortality in children appears to be very small in number and they came early in the period.

Conclusion

Empyema thoracis was found more commonly in elderly people and preschool children than young adults.

Males were affected 4 times as compared to females. Hindus were affected more than other religions possible due to there greater number. Labourers were common victims of empyema. Next to labourers preschool children were commonly affected. The incidence was common in low socio economic status.

Higher incidence was found in left side. Duration of Hospital stay was more in patients who admitted with longer duration of symptoms. The common presentation was chest pain, fever, weight loss, wet cough with sings of dull percussion note. anemia, emaciation and chest wall deformity. Family History of PTB was present in 24% of the cases. Majority of patients were either completely immunized or partially immunized in there childhood. The common presentation was of Sub Total unilateral Empyema. Pyogenic empyema was found more number of cases than tubercular, post traumatic and amoebic. Daily irrigation with normal saline and Betadine lotion (week) was found to be effective in about half of the cases. Mortality in this series was 4% all were adults. Lower mortality was seen in children.

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