SPONTANEOUS PNEUMOTHORAX: A REVIEW OF 29 ADMISSIONS INTO HOSPITAL UNIVERSITI SAINS MALAYSIA 1984 - 90

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ABSTRACT

Twenty-nine patients (16 males, 13 females) with spontaneous pneumothorax admitted into Hospital Universiti Sains Malaysia, Kubang Kerian, from September 1984 to September 1990 were reviewed. Their ages ranged from newborn to 75 years. The commonest chief presenting symptom was dyspnoea (69%), followed by chest pain (35%). Four patients had chronic obstructive airway disease, 7 had pneumonia, 2 had pulmonary tuberculosis, one patient had emphysema while 4 patients had multiple underlying lung disorders. The left and right lungs were involved with equal frequency. Bilateral pneumothorax occurred in one patient. Most patients had a single episode of pneumothorax but recurrent pneumothoraces occurred in 3 patients (10%). Six patients were observed conservatively, 20 patients required chest tube insertion alone and 3 patients also required pleurodesis. Death occurred in 8 patients (28%) mainly due to coexisting infection and respiratory failure.

Keywords: pneumothorax, spontaneous; aetiology, complications

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INTRODUCTION

The term pneumothorax, defined as the presence of air in the pleural cavity was first coined by Itard in 1803. Some 23 years later Laennac was the first to describe its clinical features. Pneumothorax can be classified into: (1) spontaneous pneumothorax - either 'Cryptogenic' (primary) or secondary to lung disease, (2) traumatic pneumothorax, and (3) iatrogenic pneumothorax.

Spontaneous pneumothorax was at first intimately associated with tuberculosis. Reviews published in the late 1800s and early 1900s listed 80 - 90% of their cases of pneumothorax as being secondary to tuberculosis[1]. It was only in 1932 that Kjaergaard[2] established spontaneous pneumothorax as an entity separate from and not caused by tuberculosis. Recent reports associated spontaneous pneumothorax with chronic obstructive airway disease in which there is a high incidence of recurrences[3].

The objective of our study was to review the clinical features of spontaneous pneumothorax seen in Hospital Universiti Sains Malaysia, a teaching and referral hospital.

MATERIALS AND METHODS

We reviewed the case records and the chest X-rays of 29 patients who was admitted with spontaneous pneumothorax to the Hospital Universiti Sains Malaysia during a 7-year period from 1984 to 1990. Those patients with traumatic pneumothorax were excluded. The age, presenting symptoms, the presence of associated lung disorders, the nature of the pneumothoraces (the side of the lung affected and whether the pneumothoraces occurred once or in recurrences), the management and the outcome of the cases were noted.

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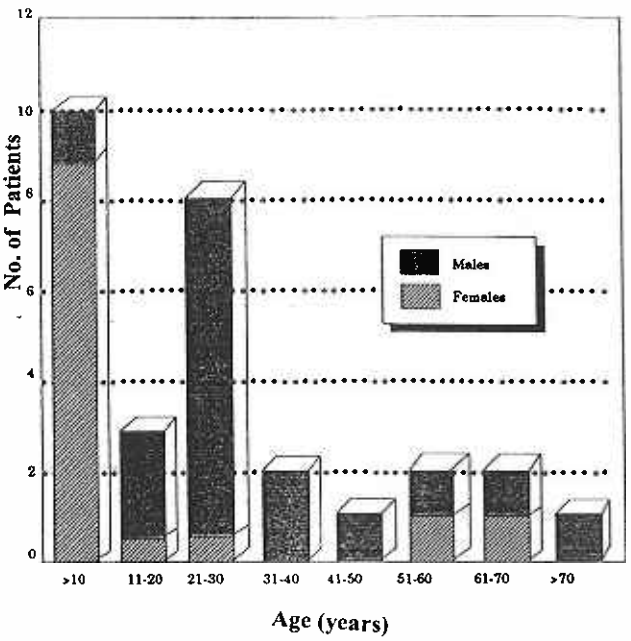
RESULTS

Age and sex

Our study included patients from all age groups. The age and sex distribution of the patients is shown in Fig 1. The mean age of the patients was 25 years (range from newborn to 75 years). The highest incidences of pneumothoraces occurred in the first and third decades. There was almost equal sex incidence (the male to female ratio was 1.2:1).

Fig 1 - Spontaneous Pneumothorax - The age and sex distribution



Presenting symptoms

The most common presenting symptom was dyspnoea which was found in 20 patients (69%), followed by chest pain which was the presenting symptom in 10 patients (35%) (Table I). Seven patients (24%) presented with both dyspnoea and chest pain. Other presenting symptoms were cough and fever.

Associated Lung Disease

Eighteen patients (61%) had associated lung disease. The frequency of associated lung diseases is shown in Fig 2. The most common associated disease was pneumonia in 7 patients

(24%). Chronic obstructive airway disease was seen in 4 patients (14%). Other associated lung diseases include active pulmonary tuberculosis in 2 patients and old pulmonary tuberculosis with bronchiectasis in 3 patients.

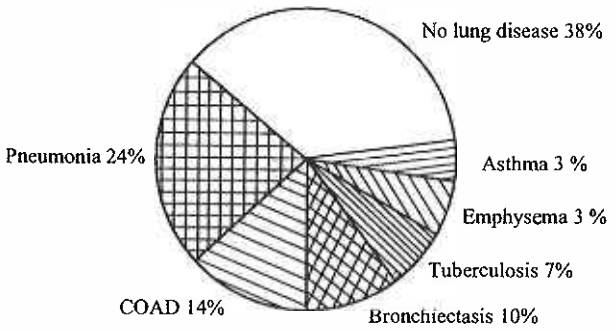
Table I - Frequency of presenting symptoms in 29 patients with Spontaneous Pneumothorax

Symptoms	No. of patients	(%)
Dyspnoea	20	(68.9%)
Chest pain	10	(34.5%)
Dyspnoea and chest pain	7	(24.1%)
Fever	8	(27.6%)
Cough	6	(20.7%)

Side and Frequency of Pneumothorax

Pneumothorax occurred with almost equal frequency in the right (52%) or the left lung (48%). One patient had simultaneous bilateral pneumothoraces. Twenty-five patients (86%) had only a single episode of pneumothorax whilst 4 patients (14%) had recurrent pneumothoraces.

Fig 2 - Associated Lung Disease in 29 Spontaneous Pneumothorax



Management

In six patients (21%), the pneumothorax was managed conservatively with observation alone (Table II). Twenty patients (69%) required chest tube insertion and 3 patients also required pleurodesis (2 surgical and 1 chemical) for either persistent leak or recurrent pneumothoraces.

Table II - Method of management of 29 patients with Spontaneous Pneumothorax

Methods of treatment	No. of patients	(%)
Observation	6	(20.7%)
Chest tube insertion alone	20	(69.0%)
Surgical pleurodesis	2	(6.8%)
Chemical pleurodesis	1	(3.4%)

Complications

In most patients, there was no complication from the pneumothorax. Surgical emphysema as a result of chest tube insertion occurred in 4 patients (Table III) and haemothorax was seen in one patient. One patient developed pneumomediastinum and pneumonia. Death occurred in 8 patients, all of whom had underlying lung disorders including the patient who had pneumomediastinum and pneumonia.

Table III - Complications in 29 patients with Spontaneous Pneumothorax

Complications	No. of cases	(%)
Surgical emphysema	4	(13.4%)
Haemothorax	1	(3.4%)
Death (including 1 pneumomediastinum)	8	(27.6%)
No complication	16	(55.2%)

DISCUSSION

Spontaneous pneumothorax is not an uncommon condition. The incidence is highest in the young adult population occurring at a rate of 1 in 10,000 per year[4]. Neal et al[5] found spontaneous pneumothorax to occur in 5 to 15 per 100,000 population. Schneider and Reissman[6] in 1945 stated that 1 in every 500 men selected at random could present a documented history of spontaneous pneumothorax. When it occurs in the younger age group, there is usually no discernible lung disease. In the older age group, chronic obstructive airway disease is the commonest respiratory disorder present[3].

Many reports found that pneumothorax was more common in males than in females. The male to female ratio has been reported to be between 5:1 or 8:1[5,6]. In our study however, there was no sex preponderance. The male to female ratio of our patients was only 1.2:1; the reason being most of the paediatric patients (which were not included in previous reports) were female. The inclusion of the paediatric patients also explains the age distribution of our patients. It has been stated that spontaneous pneumothorax occurs most commonly in the third and fourth decades. However, our results showed 62% of our patients to be in the first and third decades as 35% of the patients in this study were between 0 - 10 years of age.

Chest pain and dyspnoea are usually the main presenting symptoms reported in most studies[7,8]. Our study showed dyspnoea to be the main symptom in 69% of patients while chest pain was present in 35%. Both chest pain and dyspnoea were present in 24% of patients.

In concordance with previous reports, our study found that there was no predilection for pneumothorax to occur on any particular side. There is a tendency for recurrent pneumothoraces to occur on the same side. Fourteen percent of our patients had recurrent pneumothorax. Recurrences have been reported in 5 to 50% of cases[9-11]. The chance of a recurrence is increased with repeated episodes of pneumothorax with 20 to 25% for a second, and 80% for a fourth episode[12].

Treatment of pneumothorax depends on the severity of symptoms, the size of the pneumothorax, the presence of underlying lung disease, and the history of previous pneumothorax[13]. It is of interest to note that some workers have shown that simple needle aspiration has been found to be effective and safe in uncomplicated pneumothorax, that is in young patients and in the absence of pre-existing lung disease[14,15]. Even a small pneumothorax occurring in a patient with underlying chronic obstructive airway disease can bring on severe dyspnoea. The majority of our cases required some form of intervention, most commonly chest tube insertion. Chest tube insertion is the management of choice in primary spontaneous pneumothorax in most studies[16]. Sixty-nine percent of patients in our study required chest tube insertion alone. In recurrent pneumothoraces, thoracotomy and pleurodesis remains the procedure of choice[16].

In our study, one patient required medical pleurodesis for recurrent pneumothoraces while two other patients proceeded to thoracotomy; one after failed chest tube management and the other patient had persistent pneumothorax following venti-

lation for operation of gastric carcinoma.

The complications of spontaneous pneumothorax depend on the extent of the loss in functioning lung volume that ensues. In patients who have significant impairment of lung function, it may be life-threatening or precipitate respiratory failure. Complications include recurrence, hydropneumothorax, pyopneumothorax, haemothorax, pneumomediastinum and simultaneous bilateral pneumothorax[3]. The commonest complication resulting from management of pneumothorax was surgical emphysema. It was found in 14% of our patients. One patient developed haemothorax while another patient developed pneumomediastinum. The majority (62%) of our patients recovered without complications. However, death occurred in 8 patients (28%), four of whom were paediatric patients who had coexisting pneumonia. The death in adult patients was due to respiratory failure in three while one died due to the underlying carcinoma of the stomach.

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