ACUTE LIFE-THREATENING ASTHMA IN ASIR CENTRAL HOSPITAL

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Aim: This study was conducted to analyze the severe acute asthma admissions in Asir Central Hospital (ACH) in Abha, Saudi Arabia. In particular, it aimed to identify risk factors and final outcome of acute life-threatening asthma.

Method: All patients admitted to the Intensive Care Unit (ICU) with acute bronchial asthma from June 1989 to May 1995 were analyzed. Total admissions to the ICU were obtained to determine the prevalence of asthma admission to the ICU.

Results: There were 13 admissions for 8 patients. Three patients died and five were discharged in good condition. All patients received almost similar modes of therapy. Late presentation was the main cause of death. No patient died of asthma outside the ICU. Asthma constituted 0.42% of total ICU admissions. Several risk factors for admission to ICU were identified, including: poor compliance, previous requirement of systemic steroids, history of previous intubation, and psychiatric illness.

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Conclusion: Asthma continued to be a cause of death despite the availability of treatment. Late presentation is the main cause of death. With proper management the outcome for a majority of patients could be good even in acute life-threatening asthma.

Key Words: Acute, bronchial asthma, risk factors, life-threatening, Asir region

INTRODUCTION

There has been a flurry of reports regarding asthma deaths in developed countries particularly in the last 3 decades. From the 1970s to mid-1980s in Australia, Canada, UK, Netherlands, Sweden, USA and West Germany, statistics revealed an alarming increase in the incidence of asthma deaths.1,2 Similar trends were noted in France, Japan, Switzerland and Singapore.2 The mortality rate was highest in New Zealand, reaching 4/100,000 persons, while for all other countries mentioned here, it was less than half of this figure.2 On the other hand, there is a dearth of information regarding asthma mortality in developing countries.2-4 This fact prompted the analysis of severe acute asthma admissions to the ICU of Asir Central Hospital (ACH) in Abha, Saudi Arabia.

MATERIAL AND METHODS

All patients admitted to the ICU with acute bronchial asthma from June 1989 to May 1995 were analyzed. Admission to the ICU was considered the main criterion for the diagnosis of acute life-threatening asthma. The diagnosis of bronchial asthma was ascertained from the history and clinical course. Patients in respiratory failure from COPD and those with equivocal diagnosis of asthma were not included. The clinical charts of the patients analyzed were carefully reviewed for demographic data, laboratory tests, chest x-rays, ECG and stay in ICU. Background history on these patients, including previous hospital admissions and smoking history, whenever available was incorporated.

During the period of study, total admissions to the ICU, admissions for asthma and all other admissions to the Intermediate Medical Care Unit (IMCU) were obtained from their Registers to determine the prevalence of asthma admissions to the critical care units.

RESULTS

There were 8 patients with 13 admissions to the ICU (Table 1). These included 4 males and 4 females with a mean age of 40.6 years (range 20-65). Six Saudis had 11 admissions and 2 non-Saudis had 2 admissions. Patient number 3 had had 28 admissions to ACH for asthma in the last 8 years - 3 to the ICU, 1 from the Emergency Department (ED), 1 from the ward and the other one from IMCU. The major problem with this patient was compliance. She took corticosteroids half-heartedly because of weight gain and she missed her appointments in the outpatient clinics. Three patients died and 5 were discharged home. Two of the patients who died were previously unknown to ACH but according to relatives had definitely had a typical history of asthma. The third patient who died was an elderly female with a definite psychiatric problem. She had a previous history of systemic steroids and intubation. Her outpatient follow-up was also erratic. All the three patients who died later presented to
Table 1: Demographics and outcome of ICU admissions of acute bronchial asthma patients

| Age | Sex | Nationality | No. of yrs of asthma | Admission year | No. of ICU admissions | No. of ICU days | No. of ICU admissions | Outcome |
|-----|-----|-------------|----------------------|----------------|-----------------------|----------------|----------------------|---------|
| 45  | F   | Saudi       | 1                    | 1989           | 1                     | 2,3,18         | 0                    | Alive   |
| 65  | F   | Saudi       | 3                    | 1989,1990, 1990 | 3                     | 2,3,18         | 0                    | Dead    |
| 40  | F   | Saudi       | 25                   | 1991,1992, 1993 | 4                     | 5,4,4,1        | 24                   | Alive   |
| 20  | F   | Saudi       | 6                    | 1992           | 1                     | 2              | 7                    | Alive   |
| 40  | M   | Saudi       | 15                   | 1992           | 1                     | 1              | 0                    | Dead    |
| 50  | M   | Saudi       | 20                   | 1993           | 1                     | 1              | 0                    | Alive   |
| 30  | M   | non-Saudi   | 3                    | 1994           | 1                     | 16             | 0                    | Dead    |
| 35  | M   | non-Saudi   | 4                    | 1995           | 1                     | 3              | 0                    | Alive   |

the ED with cardiorespiratory arrest, were resuscitated, intubated and mechanically ventilated in the ICU. Smoking history was negative in all patients.

The average stay in ICU before discharge was 2.7 days (range 1 to 5 days). Mechanical ventilation was used in all cases. With regard to the patients who died, one survived less than 24 hours and the other 2 died 16 and 18 days later. The one who died within 24 hours suffered from barotrauma and arrested following bilateral pneumothoraces. The other two had major neurological deficits following the initial arrest and did not regain consciousness. They continued to be in vegetative states on full mechanical ventilation, dying later from nosocomial sepsis. Including the one who died from barotrauma, peak inspiratory pressure (PIP) was in excess of 60 mm Hg in two admissions.

All patients were given intravenous hydrocortisone and aminophylline, salbutamol nebulizer, and antibiotics; 2 patients were given intravenous adrenaline and anticholinergic nebulizer.

Acute asthma patients are admitted either to the IMCU or ICU. The total number of asthma admissions to the IMCU during the study period was 166 (43 males and 123 females) out of a total 6,372, making asthmatics 2.6% of all IMCU admissions. The corresponding figures for ICU are 13 of 3,074 total admissions or 0.42%.

DISCUSSION

In our 6-year study of acute severe asthma admissions to the ICU, we noted 13 admissions for 8 patients with 3 deaths. No patient died of asthma in the wards or IMCU. Interestingly, a recent report from this country documented no deaths in 5,101 episodes of acute asthma presenting to the Accident and Emergency Department of a teaching hospital.

All three patients who died presented in the ED with a cardiorespiratory arrest requiring immediate resuscitation. Corroborating these deaths, it has been reported that asthma deaths occurred more often at home than in the hospital. Indeed, the trend in the developed countries now, is to try to give asthmatics emergency care promptly via emergency care facilities or ambulances within 5-10 minutes of a distress call from a patient. This practice has decreased asthma mortality 6-fold as compared to patients seeking medical help themselves. Failure of physicians, patients and relatives to assess severity of asthma is another contributing factor in late presentation. Most physicians cannot assess the severity of acute asthma attacks without the
use of objective measurements. In one study, the objective measurement led to a change in a management of 20% of patients with acute attacks.

Only 5-10% of all asthmatics run the risk of fatal or near-fatal asthma. Those most at risk include the middle-aged and the elderly with less than 10 years of asthma, those requiring systemic steroids during a previous year, those having recurrent attacks of severe asthma, and nocturnal asthma attacks. Other risk factors are an increasing need for inhaled bronchodilators, progressively worsening peak flow rates, failure to monitor asthma with a pulmonary function test, unavailability of steroids at home for systemic use in acute attacks, history of previous intubation or of psychiatric illness. In our study, risk factors documented included poor compliance, previous requirement of systemic steroids, history of previous intubation and psychiatric illness.

Although the true incidence of bronchial asthma has not been studied in Saudi Arabia, it is a common condition seen at the hospital level. In the first report, asthma constituted 5.72% of patients presenting to the Accident and Emergency Department, while in the latter, asthma was the commonest chronic lung disease seen in a Chest Clinic in a hospital, comprising 43% of all respiratory diseases. Therefore, the figure of only 13 admissions to the ICU in 6 years is rather small and most likely related to the fact that this was a hospital-based study. However, this study could stimulate a more comprehensive study of mortality from asthma in the country, including those who die before they reach the hospital.

Finally, the prevention of fatal or near-fatal asthma may be achieved by avoiding or controlling risk factors. In this regard, both doctors and the public need education on asthma and this should be available everywhere in the world including Saudi Arabia.

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