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Acute epiglottitis: a review of 80 patients

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Abstract
We reviewed 80 patients admitted to our hospital who were diagnosed with acute epiglottitis between January 1995 and March 1999, and their clinical features, evolution and treatments were analysed. No sexual predominance was found, and there was no patient younger than 16 years of age. The patient fatality rate was 1.3 per cent, and the hospitalization period was markedly longer than those of other reports.

Key words: Epiglottitis; Infections; Outcome Assessment (Health Care)

Introduction

Acute epiglottitis is a rare disease that may become serious or even fatal because of sudden upper airway obstruction. Clinical characteristics of this disease have been discussed in several reports mainly from Western countries, but little information about this disease has been provided from Asian countries.

Our university hospital has an emergency medical centre covering one third of the Tokyo Metropolitan area, and the treatment of this disease is one of the main procedures in our department. This study was undertaken to review our experience of the past four years and to provide the clinical and therapeutic aspects of this disease in Japan.

Methods

The charts of 80 hospitalized patients admitted to Kyorin University Hospital diagnosed with acute epiglottitis between January 1995 and March 1999 were reviewed, Details of sex, age, clinical history, laboratory findings, and clinical course were collected for all patients.

The diagnosis of acute epiglottitis was made according to the clinical symptoms and a laryngoscopic examination. The diagnosis was established when oedema and erythema of the epiglottis was observed with a fibreoptic laryngoscope. Most patients had diffuse supraglottic inflammation and oedema.

Imaging methods were not used for the final diagnosis, since the time expended on imaging may delay rapid lifesaving treatment. However, once the diagnosis was established, the condition of the patient's upper airway was observed not only by visual inspection but also by lateral roentgenograms or computed tomography (CT) scan of the neck, several times during the hospitalization.

In this study a bacteriological examination was not routinely conducted for the following reasons: (1) the sampling procedure from the epiglottis may enhance the swelling of the epiglottis; and (2) it takes about a week to get the final reports of the bacteriological study and by that time the critical period of the therapy has already passed in most patients.

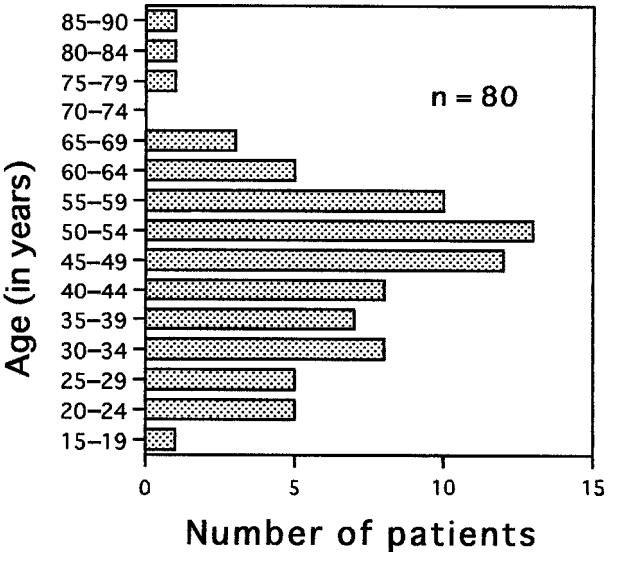

Fig. 1
Age distribution of patients with acute epiglottitis.

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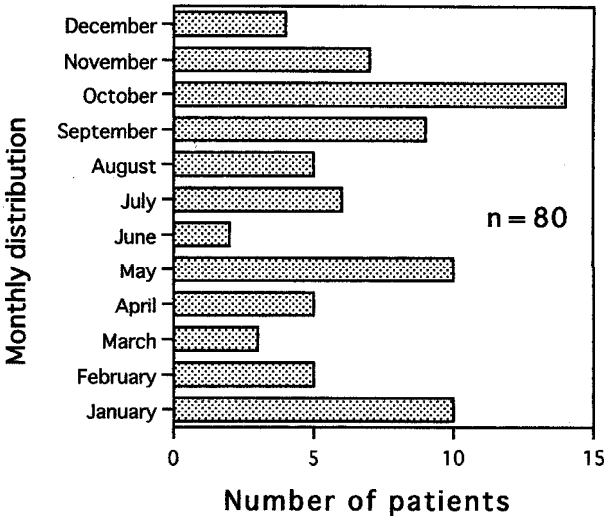

FIG. 2
Monthly incidence of acute epiglottitis.

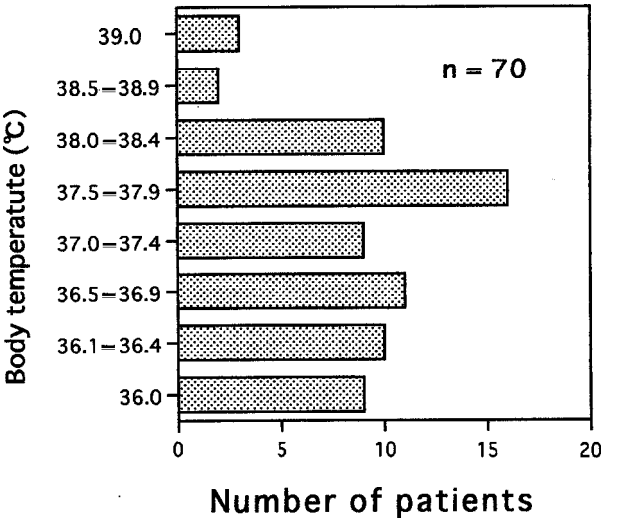

FIG. 3
Distribution of body temperature of patients with acute epiglottitis.

Results

Sex and age

Among the 80 patients, there were 42 males and 38 females. Figure 1 shows the age distribution. The age of the patients ranged from 17 to 85 years, and the average age was 46.3 years. There was no patient younger than 16 years of age. Approximately 50 per cent of the patients were in their 40s and 50s.

Monthly distribution

Figure 2 shows the number of patients admitted each month. October had the highest number, and relatively high numbers of patients were also admitted in January and May.

Clinical presentation

The chief complaint is outlined in Table I. Sixty patients (75 per cent) complained of throat pain. Figure 3 shows the distribution of body temperature at the initial consultation. An elevation of body temperature (above 37.5°C) was noted in 31/70 of the patients (44 per cent). In laboratory findings, 67/80 (84 per cent) showed leukocytosis, with counts higher than 10 000/cm^2 (Figure 4), and the serum C reactive protein (CRP) value was above normal in 73/80 (91 per cent) (Figure 5).

Therapy and clinical course

In all patients, antibiotics were intravenously administered, and piperacillin sodium (PIPC) was the most frequently used (Figure 6). Additional therapies were required for lifesaving (Table II).

TABLE I
DISTRIBUTION OF CHIEF COMPLAINTS

Symptoms	Number of patients
Sore throat	60 (75%)
Odynophagia	10 (12.5%)
Dyspnoea	6 (7.5%)
Others	4 (5%)

Steroids were administered intravenously to patients showing a respiratory disturbance. In five patients, an emergency tracheotomy was conducted. However, one patient died due to airway obstruction. Figure 7 shows the hospitalization period of the patients. Sixty-five out of 80 (81 per cent) were hospitalized for six to 15 days. Five patients who received tracheotomy required a hospitalization period longer than 16 days.

Discussion

Eighty patients with acute epiglottitis have been treated over a period of four years and three months, and the number admitted per year was markedly higher compared to those in previous reports.[1–4] Our hospital emergency centre is the only 24 hour centre in the Tokyo San-Tama area, and most patients in this area are admitted to our hospital. However, acute epiglottitis has not been encountered in patients younger than 16 years of age. This fact

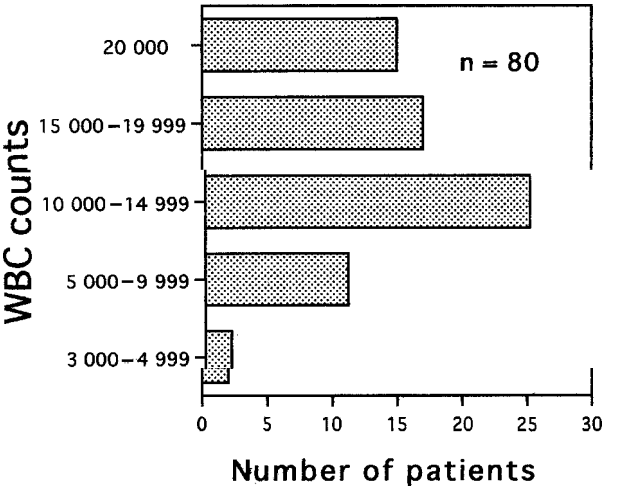

FIG. 4
Distribution of the WBC counts of patients with acute epiglottitis.

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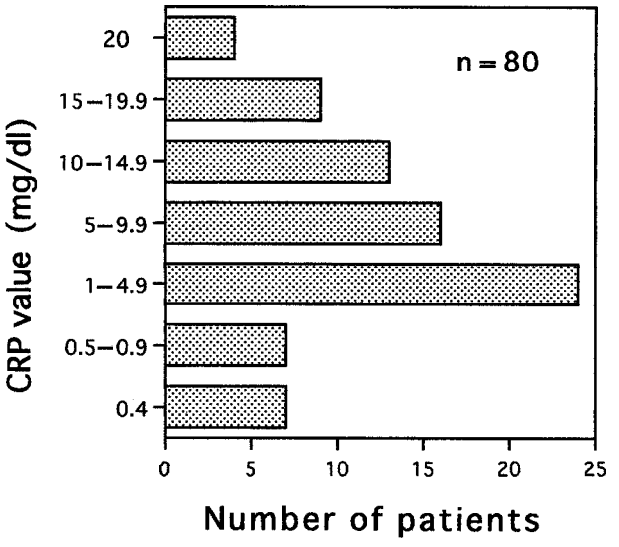

FIG. 5
Distribution of the CRP value of patients with acute epiglottitis.

may suggest low occurrence rate of this disease in Japanese children. This epidemiological characteristic of the disease has also been described in a Japanese text book of otolaryngology.[5] In Japan, *Haemophilus influenzae* vaccine is not routinely prescribed to children. However, especially in Tokyo, paediatricians and otolaryngologists tend to prescribe antibiotics almost routinely to paediatric patients suffering from acute otitis media or acute upper respiratory infections. This preventative administration of antibiotics may reduce the occurrence rate of the severe *Haemophilus influenzae* infection which causes acute epiglottitis in children.

The sex distribution of our patients was different from those in previous reports, which revealed a male predominance for this disease.[1–4,6–8] No sexual predominance was noted in our patients.

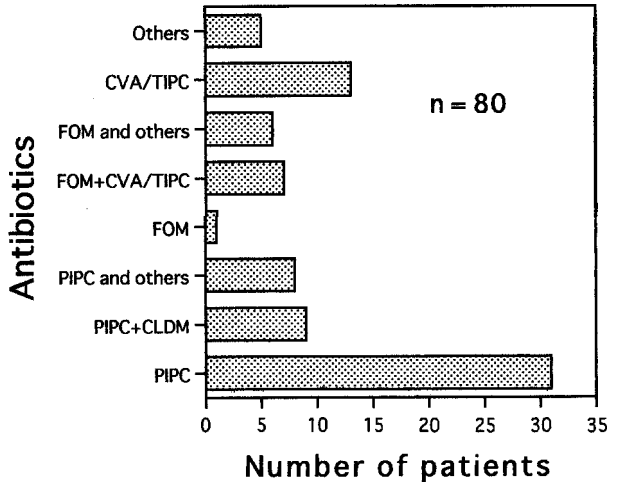

FIG. 6
Antibiotics administered to patients with acute epiglottitis. PIPC: piperacillin sodium, FOM: fosfomycin calcium CLDM: clindamycin, CVA/TPIC: ticarcillin sodium and potassium clavulanate

TABLE II
ADDITIONAL TREATMENTS

Treatment	Number of patients
Steroids	40 (50%)
Tracheotomy	5 (6.25%)

Some other reports have emphasized a seasonal occurrence for this disease.[3,7] Our study showed that October, January and May were the months with the highest number of patients. There is a one-week holiday season in January and May in Japan, and our hospital is one of the few hospitals available during this time. This fact explains the higher number of patients in those two months. The higher number of patients in October may be related to the higher occurrence rate of this disease in the autumn.[3]

In respect to the clinical findings of this disease, no significant differences were found between our report and others. In our patients, the most common complaint was throat pain, that was also reported by Deeb *et al.*,[1] Frantz *et al.*,[4] Mayo Smith *et al.*,[9] Ossoff *et al.*,[10] and Shih *et al.*[2] Similarly, fever and leukocytosis were found in most of our patients.

The relationship between acute epiglottitis and *H. influenzae* infection was noted in some studies,[1,4,6,9] and the antibiotics active against *H. influenzae* were recommended as the first choice.[1,6,9] However, Frantz *et al.*[4] reported that other organisms (*Staphylococcus aureus*, group A haemolytic astreptococcus, and *Streptococcus pneumoniae*) also caused acute epiglottitis. We prescribed piperacillin sodium (PIPC) or ticarcillin sodium (TIPC) as the first choice. Those two antibiotics are effective against both Gram positive and negative bacteria including *H. influenzae*, and show a broader anti-bacteriological spectrum than amoxycillin does. This study showed that the therapeutic effects of those two antibiotics were satisfactory.

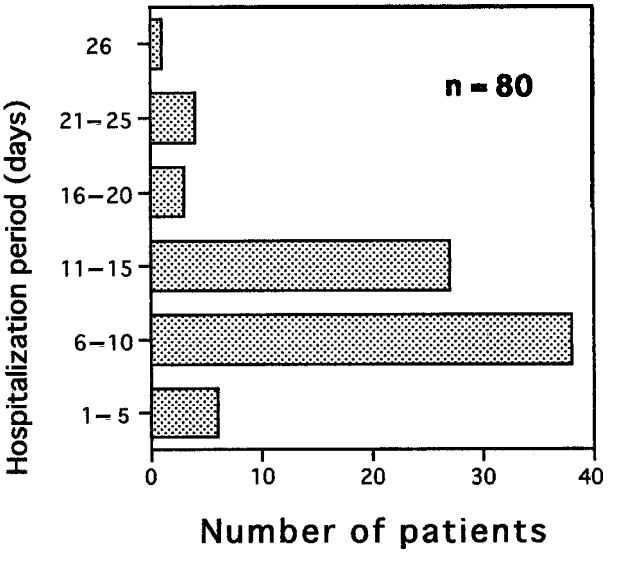

FIG. 7
Hospitalization period of patients with acute epiglottitis.

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In addition to a tracheotomy, orotracheal intubation was conducted for the airway management in previous reports.[1–4,8] In our patiens, only tracheotomies were conducted as artificial airways. Because the failure of an orotracheal intubation would enhance the swelling of the epiglottis, a tracheotomy was preferred to orotracheal intubation. Following this strategy, our patient fatality rate has been one out of 80 (1.3 per cent). This rate was comparable to one report[8] and was less than in another.[9]

More than 90 per cent of our patients required a hospitalization period longer than five days. This period was clearly longer than those in American reports[1,2,4] and a European report.[3] After the oedema of the airway had totally disappeared, the patients were observed routinely for two to four days prior to decannulation in order to prevent recurrence. Patients who underwent tracheotomy, were kept in our hospital until the tracheostoma was completely closed. These therapeutic strategies elongated the hospitalization period. In Japan the cost of medical treatment is relatively lower than that in American and European countries. This factor permits patients to stay in the hospital for a longer period.

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