

# RETROSPECTIVE STUDY OF EMPYEMA CASES IN NATIONAL PEDIATRIC HOSPITAL, CAMBODIA

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**Abstract.** Majority of empyema cases admitted into the National Pediatric Hospital (NPH), Cambodia were of bacterial origin (EB: 95%), the rest were caused by tuberculosis bacilli (ETB: 5%). The morbidity of overall empyema, empyema of bacterial origin and empyema of TB origin between boys and girls was the same, even though boys were more likely to be exposed than girls.

The mean age of patients with ETB was significantly greater than those of EB,  $84.7 \pm 46$  months versus  $52.5 \pm 37$  months. Since NPH is located in Phnom Penh, most of our cases were from Kandal, Phnom Penh, and provinces nearby.

On average all of the patients stayed in the hospital for  $23.26 \pm 14.9$  days (rank 1-91 days), and the mean duration of hospitalization of the ETB patients was significantly longer than that of EB patients,  $32 \pm 19$  days versus  $22 \pm 14$  days respectively.

The yearly incidence of empyema cases in 1990-1993 had the trend of slightly increased frequency during March to May. The overall EB case fatality rate was 3%, contributed to by delayed referral of cases.

## INTRODUCTION

Most of the patients admitted to the National Pediatric Hospital (NPH) with severe or very severe respiratory infection are referred to Ward E (or respiratory ward). Empyema is one of the commonest and most severe problems among the cases admitted.

In Cambodia, the incidence of empyema appears to be related to low socio-economic status and poor nutritional status; malnutrition is frequently an associated problem. Tuberculosis infections are also common in Cambodia.

The physicians caring for these sick children wished to have a better understanding of which microorganisms were most commonly causing empyema in children admitted to the NPH. The major point of interest is how many of empyema cases are caused by pyogenic bacteria and how many are caused by tuberculosis infection.

The aim of this study was to examine demographic data (age, sex, home location), morbidity data (diagnosis, duration of stay in the hospital) and mortality rates of the empyema patients admitted to Ward E of the National Pediatric Hospital between

1990 and 1993. Data were grouped by two major etiological categories, tubercular empyema vs other pyrogenic, non-tuberculosis bacterial empyema.

## MATERIALS AND METHODS

This is a retrospective study in which records of all cases of empyema admitted into ward E of the National Pediatric Hospital-Phnom Penh during 1990-1993 were reviewed. The total number of cases was 746.

The case definition of empyema was based on clinical findings and pleural tapping. The following signs suggested the need for a pleural tap:

- Decreasing breath sounds
- Decreasing fremitus
- Dullness when performing percussion
- Pleural tapping confirmed the case

The treatment regimen was rifampicin + INH + PZA (or EMB) for 3 months, then INH + PZA (or EMB) 6 months.

The non-TB and TB cases were differentiated according to the comparison in Table 1.

Table 1  
Comparison non-TB and TB cases.

Variables	Non-TB	TB
Age	small children	Adolescents
General appearance	Toxic	Non toxic
Fever	Lasting < 1 month, usually high	Lasting > 1 months, low grade
Pleural fluid	Frank pus	Clean
Laboratory	In some cases, organism seen by direct smear or culture	No organism seen no culture done
Treatment	Completely well after 3 weeks of antibacterial treatment	No improvement by anti-bacterial treatment

## RESULTS AND DISCUSSION

### Demographic profile

There were 746 patients in this study, of which 309 (41%) were female and 437 (59%) were male. There was no statistical difference between male and female children who were diagnosed as empyema admitted to NPH ( $p = 0.7$ ).

There were 708 children diagnosed as empyema of pyogenic bacterial origin (95%), and 38 diagnosed as empyema of tuberculous origin (5%).

Among those whose diagnosis was empyema of pyogenic bacterial origin (EB) ( $n = 708$ ), 299 were female and 409 were male; among those whose diagnosis was empyema of TB origin (ETB) ( $n=38$ ), 10 were female and 28 were male. There were no significant differences between gender and diagnosis.

Ages of the children involved in this study ranged from 3 to 240 months. Mean age  $\pm$  SD was  $52.5 \pm 37$ . Regarding those in the EB group, the mean age  $\pm$  SD was  $50.8 \pm 36$ , and of those of the ETB group, the mean age  $\pm$  SD was  $84.7 \pm 46$ . The ETB patients were significantly older than the EB patients ( $p < 0.001$ ).

Table 2

Distribution by province of home origin and diagnosis.

Location	EB	ETB	Total
Kandal	253	10	263
Phnom Penh	143	5	148
Kompong Speu	83	8	91
Takeo	70	5	75
Kompong Cham	54	2	56
Prey Veng	45	2	47
Kompong Chhnang	9	1	10
Kompong Som	7	2	9
Kompong Thom	8	1	9
Koh Kong	7	2	9
Svay Rieng	5	0	5
Kompot	2	0	2
Battambang	2	0	2
Kratie	1	0	1
Posat	1	0	1
Total	707	38	745

Locations where the majority of the patients came from were Kandal, Phnom Penh, Kompong Speu, Takeo, Kompong Cham, Prey Veng; very few patients were from the other provinces (Table 2). There were no significant differences between the location of the children's home and their diagnoses ( $p = 0.22$ ).

### Clinical profiles

The mean duration of all the empyema cases involved in this study was  $23.26 \pm 14.9$  days range <1-91 days). The mean duration of hospitalization of the ETB patients was significantly longer than that of EB patients,  $32 \pm 19$  days versus  $22 \pm 14$  days ( $p = 0.0001$ ); the cases of ETB were given a complete TB treatment regimen with 100% (38/38) follow-up and recovery rate.

Admission of cases in the years 1991 and 1992 (211 cases and 262 cases, respectively) had a greater number than the year 1990 and 1993 (113 cases and 160 cases, respectively). This may be explained by improvement of the peripheral health care system or/ and sharing cases by Kantha Bopha Hospital (another pediatric hospital which was inaugurated in November 1992). The trend was also observed that case admission increased in March to May in every year.

Twenty-two cases died, all in the EB groups. The case fatality rate was 3% (22/708).