Pediatric empyema thoracis and parapneumonic effusion in ASEAN countries

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During the past decade, the incidences of pediatric parapneumonic pleural effusions and empyema thoracis have increased in various parts of the world. Empyema thoracis is associated with significant morbidity and mortality in children and the consequences of this condition may be severe, including prolonged hospitalization, the need for intensive supportive care and drainage of accumulated fluid, surgical intervention and the use of complex antibiotic regimens.

To date, few studies have been conducted regarding the incidence and etiology of parapneumonic pleural effusions and empyema thoracis in the Asia-Pacific region, and there are no data published for Thailand. A previous study conducted in Taiwan between 1997 and 2004 showed that the annual population-based incidence of empyema thoracis reached 10.5 episodes per 100,000 children under 5 years of age and that *Streptococcus pneumoniae* was the most common pathogen identified in this age group. A more recent study conducted in China, Korea, Taiwan, and Vietnam identified *Staphylococcus aureus* followed by *S. pneumoniae* as the most frequently isolated organisms in patients with empyema thoracis.

In Thailand, antibiotics can be purchased without prescription and their widespread and over use is at least in part responsible for the high level of antibiotic resistance observed among *S. pneumoniae* isolates here. Previous antibiotic use by a patient reduces the ability to detect causative pathogens by standard bacterial culture techniques. Molecular techniques may need to be used to identify pathogens and pneumococcal serotypes and they may have a higher sensitivity.
We performed a study aimed to identify the bacterial etiology of empyema thoracis or parapneumonic pleural effusion in Thai children, with a focus on pneumococcus. In conclusion, this study found in Thai children with empyema thoracis and parapneumonic pleural effusions, *S. aureus* was the most frequently detected bacteria with bacterial culture and *S. pneumoniae* was the most frequently detected bacteria with PCR. The pneumococcal serotypes identified were 1, 3, 5, 6AVB, 9A/V, 14, 15A, 19F and 23A. Molecular analysis of the pleural fluid samples improves the sensitivity of detecting bacteria in the pleural fluids. Although PCR is more sensitive and specific, there are limitations to this technique. Improvements need to be made, such as the reduction of reducing negative samples and the number of unknown pneumococcal serotypes in children with parapneumonic pleural effusions.
References

