Editorials

The treatment of empyema in childhood

As with much in paediatrics and surgery, management of empyema in childhood is by personal preference rather than scientifically determined protocol. The condition is less common in children than in adults, and management decisions often have to be extrapolated from the adult experience.

The usual history is of an acute onset pneumonic illness in a previously fit child which fails to resolve with antibiotics. The initial or subsequent chest radiograph shows a pleural effusion. In the rare child with atypical features, alternative diagnoses should be considered; these include any cause of a pleural effusion, but particularly tuberculosis, lymphoma and sarcoma. Initial investigations of the pneumonia will have included a white count (elevated); blood culture; and sputum (rarely available in children). Common organisms include *staphylococcus*, *pneumococcus*, *haemophilus* and *streptococcus* species[1]. My first line choice of empirical antibiotics is therefore high dose intravenous flucloxacillin with cefuroxime. There is no place for benzyl penicillin as a single agent in the blind treatment of pneumonia in childhood. Anaerobic and gram negative organisms are very rare in the previously well child, but if they are suspected, I would use a combination of intravenous metronidazole, ceftazidime and imipenem. In nearly 40% of cases, no organism was found[1]. However, few centres routinely look for bacterial antigen in blood, urine or pleural fluid.

Usually by the time the diagnosis has been made, the child will have been placed on intravenous antibiotics appropriate to a community acquired pneumonia. Oxygen should be given if the child is desaturated. If it is thought that there may be a pleural fluid collection, ultrasound is an excellent screening test, available in any district general hospital. There is no consensus on how to manage pleural effusion in the child with pneumonia. Many simple synpneumonic effusions will resolve without treatment. My preference would be to do a diagnostic tap on all but the smallest effusions, and insert a chest drain if the fluid was viscous or contained white cells. More elaborate scoring systems have been devised, based on pleural pH and glucose[1,2], but in my experience these are not helpful. If intrapleural streptokinase is to be used[2], it seems to me to be more logical to use it at this stage, before loculation of the fluid has occurred. Loculation may happen within a few days even in healthy children.

Children are usually referred to a specialist centre because the effusion/empyema has not resolved with antibiotics, thoracocentesis, or intercostal tube drainage. At this stage, full reassessment is necessary, and a computerized tomography scan of the chest with the administration of intravenous contrast is performed. Assuming the diagnosis is correct, these children should be seen by a paediatrician and a thoracic surgeon with extensive operative experience in children. The decision to proceed to decortication depends on the nature of the empyema and the aggressiveness of previous treatment. If the pleura is not grossly thickened, there is no loculation and intercostal drainage has not been tried, then a drain should be placed, usually under a general anaesthetic. The use of intrapleural streptokinase should be considered, because it is safe and may possibly do good. However, if as is usual in tertiary referral practice, the pleural space is full of thick locules of fluid, then decortication is recommended after any necessary resuscitation of the child. In my tertiary referral practice, most children go for decortication, conservative measures having been tried and failed elsewhere. The results of surgery are usually excellent, with the child discharged well within a few days. The rapidity of response to surgery, combined with the very long course in adults treated with streptokinase[2], makes a trial of this agent at this stage in children very unattractive. My practice is empirically to continue an appropriate oral antibiotic for a month after surgery.

As with any child with a severe or complicated pneumonia, underlying causes should be sought. A bronchoscopy should be performed at the time of decortication or closed tube thoracostomy to exclude structural abnormalities of the airway or lung. Further investigations should be directed to excluding local or systemic immune deficiency; and cystic fibrosis, particularly in the young child with staphylococcal empyema. Long-term follow-up studies have shown excellent symptomatic, radiologic and functional results in most children[3-6]. Extrapulmonary restrictive disease is very rare. Some survivors may have mild airway obstruction of doubtful significance. The use of chest drains versus antibiotics alone do not seem to affect the long-term results, confirming that acute treatment should be determined to ensure the most rapid resolution of symptoms, without regard for long-term consequences.

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