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suggestion to overcome symptoms) and behavior therapy (reward when there is symptom reduction, aversion therapy, hypnosis and relaxation)(4,5)

It must be emphasized that most of the reported cases of intractable sneezing are psychogenic in nature, particularly in adolescent patients(2-5,7-10). The diagnosis therefore must be considered when confronting such patients in order to avoid an unnecessary extensive medical evaluation and unneeded medications, parental anxiety and effect on school performance(2,4,7,9). Discovery of the specific psychogenic triggering event and avoidance of secondary gain (or attention) can sometime ameliorate the symptoms(5,10).

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Pneumococcal Subdural Empyema in Young Infants

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We report three young infants including a neonate with fulminant pneumococcal subdural effusion.

S. pneumoniae continues to be a leading cause of bacteremia and meningitis in infancy.

Pneumococcal subdural empyema is however a complication rarely reported in neonates. Only one of 8 infants reported by Farmer in 1973 had pneumococcal etiology(1). In a previous Vellore study(2), only 5.5% (5/90)

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TABLE I—Results of CSF, Subdural Fluid and Blood Analysis

| | Patient 1 | | Patient-2 | | Patient-3 | |
|-----------------------|------------------|--------------------|------------------|---------------------|------------------|--------------------|
| | CSF | Subdural fluid | CSF | Subdural fluid | CSF | Subdural fluid |
| Appearance | | Thick pus | | Purulent | | Purulent |
| Volume (mL) | - | Left-10 Right-1 | - | Left-15 Right-10 | - | Left-10 Right-1 |
| Cells/mm ³ | 575 | 10,100 | 1490 | 1800 | 350 | ND |
| RBCs/mm ³ | 865 | 1800 | 1 | 1500 | 0 | ND |
| Diff. count | N90%: 10% | N 100% | N 17% L83% | N92%L8% | N25%L75% | ND |
| Sugar mg% | <25 | ND | <25 | ND | <25 | ND |
| Protein mg% | 520 | ND | 134 | 233 | 334 | ND |
| CSF culture | Pneumococci (H)* | No growth | Pneumococci (H)* | Pneumococci (H)* | Pneumococci (H)* | No growth |

ND = Not done, H = Heavy growth, * Sensitive to penicillin, ampicillin, oxacillin, chloramphenicol, cefotaxime.

subjects had subdural effusion of pneumococcal etiology, none of them was a neonate.

Patient 1 was a 94 hours old term male, brought with fever of 39.9°C, poor feeding and shrill, incessant cry for 36 hours. There were no risk factors for infection. Patient II was a 50 day old male infant brought with lethargy, poor feeding, cough with rapid breathing for two days, two episodes of uprolling of eyes with tonic posturing for one day and cold dusky extremities. Mother had leaking per vaginum for 3 days prior to delivery. Patient III was a 40 day old female baby admitted with fever, poor feeding and breathlessness for one day. She was tachypneic and grunting. All 3 infants had tense and bulging anterior fontanelle, hypertonia of all four limbs, brisk deep tendon reflexes and absent neonatal reflexes.

Table 1 shows results of laboratory investigations of these patients. CSF and subdural fluid smear and/or culture of the three babies were positive for pneumo-cocci. Blood culture also grew *S. pneumoniae* in two out of three cases; *i.e.* patient I and III. All of them were treated with penicillin (4 million units/kg/day) and gentamicin (5 mg/kg/day). Subdural paracentesis was done in view of rapidly increasing head circumference, seizures or apnea. Despite adequate treatment and ventilatory support, the first two succumbed on the third and sixth hospital days. The third was discharged on request in a moribund condition.

Discussion

Subdural collections complicating meningitis can be either effusions or empyema. Clinical differentiation between the two is important for management and outcome. Subdural effusion, which is a reactive phenomenon, occurs in 40-60% of infants with proven meningitis. Subdural

empyema (frankly purulent collection) is rare and occurs from concomitant extension of infection from the leptomeninges into the subdural space(3). It is suggestive of a poorer prognosis and outcome(4).

Neonatal pneumococcal infections though rare are described in literature but pneumococcal subdural empyema has not been reported. Neonatal invasive pneumococcal disease has been recognized to be associated with ascending infection from endocervical disease in the mother and is frequently associated with prolonged rupture of membranes(5).

Adequate treatment consists of prompt systemic administration of antibiotics combined with surgical drainage. In the pre-antibiotic era, subdural empyema was a uniformly fatal disorder, but the advent of antibiotics has seen a drop in mortality to 5-30%(6). However, in survivors, permanent neurological deficits like seizures or hemiparesis might persist.

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