

Management of central diabetes insipidus with oral desmopressin in a premature neonate. *Journal of Pediatric Endocrinology & Metabolism* 2004; 17: 227-230.

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Recurrent Meningitis in a Family with C3 Deficiency

A 3-year-old girl presented to us in November 1998 with fever, headache and altered sensorium of two days duration. She was sick, irritable, drowsy and had neck rigidity. Blood counts showed leucocytosis. CSF came under high pressure and was turbid. It had 550 cells per mm³ with 65% polymorphs and 35% lymphocytes. CSF proteins were 2 g/dL and glucose was 0.7 mg/dL. Gram stain showed gram positive cocci and CSF culture grew *Streptococcus pneumoniae*. She was treated with IV Ceftriaxone and made a complete and uneventful recovery. She presented again after 3½ with another episode of fever, lethargy and vomiting. CSF and blood culture again revealed streptococcus pneumoniae. She was again treated with IV Ceftriaxone and made complete recovery. She had a past history of two episodes of otitis media and one episode of *Escherichia coli* urinary tract infection.

In March 2002, her sibling, a boy aged 10 months presented with a short history of fever, vomiting and convulsions. Clinical diagnosis of acute meningitis was entertained. CSF and blood culture grew *Streptococcus pneumoniae*. He was also treated with IV Ceftriaxone and he made an uneventful recovery. He had chronic suppurative otitis media since the age of six months and also had recurrent chest infection

and wheeze.

Family history showed three deaths due to probable meningitis (an uncle aged 28 years, a cousin aged nine years and sibling aged nine months).

In view of the history of recurrent infection and pneumococcal meningitis we investigated the two siblings for immunodeficiency. Both siblings had normal blood counts, immunoglobulin levels and lymphocyte subsets. Total hemolytic complement activity, *i.e.*, CH 50 was 28.5% in the first child and 33.7% in the second (Normal range: 80-100%). Complement C3 levels were 0.06 g/L in both which were very low (Normal range 0.7 to 1.6 g/L). Other complement levels were within normal limits. Complement levels in parents were within normal limits. A diagnosis of familial C3 complement deficiency was made.

Both patients were put on prophylactic antibiotics and were immunized with *Pneumococcal* and *H. influenzae* vaccines.

Complement deficiencies can present at any age and make children more prone to infections with capsulated organisms leading to meningitis or sepsis.

Deficiency of Classical pathway defect (C1, C4 and C2) can predispose to autoimmune diseases like systemic lupus erythematosus, rheumatoid arthritis, and glomerulonephritis. They also predispose to infections with capsulated organisms, *i.e.*, *Pneumococci* and *H. influenzae*.

C3 deficiency can predispose to recurrent upper respiratory tract infections and also infections with capsulated organisms. Deficiencies of C5 to C9 *i.e.*, membrane complex defect predisposes to infections with *Neisseria*. Defects in the alternative pathway of complement activation again predisposes to infections with capsulated organisms.

There is no curative treatment for complement deficiency. Prompt treatment of infections, prophylactic antibiotics and vaccination against *pneumococci*, *H.*

influenzae and *Meningococci* forms the main stay of preventive treatment. Gene therapy is of promise in the near future.

Acknowledgement

Lt. Col. Dr. F.K. Otoo (Consultant Pediatrician) had a lead role in the diagnosis and management of these children.

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Role of DMSA in Pediatric UTI

I read the article published in the July 2005 issue of the Journal emphasizing the utility of DMSA (99mTc-dimercaptosuccinic acid) scans in the evaluation of acute pyelonephritis in children(1). It was interesting, however I have some comments:

1. The authors enrolled 32 children with first episode of febrile urinary tract infections (UTI) and 10 with recurrent infection with positive urine cultures. All patients were subjected to ultrasound, DMSA scan during acute phase of the infection and a voiding cystourethrogram (VCUG) was done after treatment of the episode. Vesicoureteric reflux (VUR) was present in 33 (78.6%) children and an abnormal DMSA was reported in 92.9% patients. The authors have not mentioned the grade of VUR. Also, they have not mentioned the number of patients below 2 years with

VUR, as the incidence of structural abnormalities associated with UTI is highest in this group. All young children with febrile UTI are at increased risk of acute pyelonephritis and it is difficult to differentiate upper from lower UTI in this age group. Therefore, it is recommended that all these episodes in young children be managed as pyelonephritis as they have the potential for renal scarring(2,3). The benefit of DMSA in an acute stage in this category is questionable and does not change the management of individual cases(4).

2. The authors suggest that DMSA is an easily available and cheap investigation. However it needs to be emphasized that this nuclear scan is available only in metros and bigger cities and costs about Rs 2500 in the private sector. Also being a nuclear scan it delivers about 6 months of background radiation (exposure equivalent to 60 chest X-rays). In the evaluation protocol for the first UTI in