

## Transient Bulging Fontanelle after Measles Vaccination

A 9-month-old girl weighing 6.4 Kg presented with fever and three episodes of vomiting for one day. The infant was administered measles vaccine 10 hours prior to onset of fever. Vitamin A was not given. On examination, the infant was febrile (101°F) and had a bulging, tense and pulsatile anterior fontanelle measuring 3 cm. Systemic examination, including neurological, and fundus were normal. Total leukocyte count in the blood was 8100/mm<sup>3</sup>. Lumbar puncture revealed clear cerebrospinal fluid (CSF) with high opening pressure. CSF was acellular; sugar and protein were 72 mg/dL and 24 mg/dL, respectively. Blood and CSF cultures were sterile. Magnetic resonance imaging (MRI) of brain was normal.

Ceftriaxone was started empirically. Fever subsided within 24 hours. Bulging of the fontanelle decreased immediately following lumbar puncture and it remained level subsequently until discharge and on follow-up after 3 months. Child's neurological development was normal.

Bulging anterior fontanelle in infancy is a sign of raised intracranial pressure. It has several causes including central nervous system infections, hydrocephalus, space-occupying lesions and pseudotumor cerebri syndrome (PTCS) [1]. PTCS is characterized by increased intracranial pressure, with a normal CSF cell count, sugar and protein content and normal ventricular size, anatomy, and position documented by MRI [2]. This may be primary (idiopathic) or secondary. Etiology for secondary PTCS includes cerebral venous abnormalities (cerebral venous sinus thrombosis, superior vena cava syndrome, mastoiditis, hypercoagulable states), medications (vitamin A, nalidixic acid, tetracycline, steroids), vaccines and medical conditions (rickets, addison disease, hypoparathyroidism) [3,4].

In any patient, 'definite transient bulging fontanelle' is defined as bulging fontanelle with normal neuroimaging and CSF analysis, and absence of depressed level of consciousness, focal neurologic findings or identified cause. Follow-up must reveal normal development. 'Probable transient bulging fontanelle' lacks either lumbar puncture or neuroimaging or both but meets all other criteria [4].

We attribute to transient bulging fontanelle in this child administration of measles vaccine based on temporal association with no other identified cause.

Transient bulging fontanelle has been reported following diphtheria-pertussis-tetanus, diphtheriatetanus (DT) and acellular pertussis vaccines. Its recurrence following subsequent vaccinations with DT has been documented [4], but association of measles vaccination has so far not been reported. History of recent vaccination in an infant presenting with bulging fontanelle may give a clue to the etiology, and improves surveillance of adverse events following immunization.

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