Ohtahara syndrome

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Introduction

Infantile seizures are an important component of convulsive disorders in children. Recognised aetiological factors for seizures in early infancy are hypoxic ischaemic encephalopathy, metabolic disturbances, intracranial haemorrhage, infections, toxins and inborn errors of metabolism. In about 10% of cases no cause is detected.

Identification of the pattern of seizures is essential as it may provide information regarding aetiology and prognosis (1). Typical tonic-clonic seizures are rare in infancy. Myoclonic seizures, defined as rapid isolated jerks of parts of the body or the whole body, usually represent underlying cerebral abnormalities. Infantile spasms are flexion, extension or mixed type of jerky movements occurring in clusters. They typically occur just before falling asleep or just after waking up. Subtle seizures are reported to be the most common type of neonatal seizures.

Abnormal chewing, sucking, tongue thrusting or pedalling limb movements are examples of subtle seizures. In addition to these isolated types, some specific epileptic syndromes have been described. Ohtahara syndrome is one of them.

Case report

A two-month and six-day old infant, the first child of a non-consanguineous marriage, was seen with a 4-day history of flexor type of jerky movements occurring in clusters. The symptoms were most marked just after waking from sleep. The child had generalised tonic type of convulsions on the day of admission.

The antenatal period was uneventful, and she was delivered by emergency caesarean section for poor progress of labour. There was no history of abnormal foetal movements or birth asphyxia. The neonatal period was uneventful. However, the child had no social smile up to the time of admission. There was no family history of epilepsy.

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Examination revealed a well-grown female infant without any facial dysmorphism. The anthropometric measurements were normal. There were no neurocutaneous manifestations or stigmata of intrauterine infection. She did not smile with the mother and did not visually follow objects, but was otherwise normal neurologically. The optic fundi were normal.

Ultrasound scan (USS) of the brain was normal. Electroencephalogram (EEG) showed characteristic burst suppression pattern with high amplitude spike bursts (Figure 1). Computerised tomogram (CT) of the brain showed early cerebral atrophy in the frontal and parietal regions.

Figure 1. EEG a few days after the first admission.

The baby was started on clonazepam 0.5 mg twice daily and sodium valproate 100 mg twice daily as she had two different types of seizures. Tonic type of convulsions responded to the treatment but infantile spasms persisted. As the response was not optimal, adrenocorticotrophic hormone (ACTH) was started at a dose of 40 IU daily, and the child became free of fits within three days. Two weeks later ACTH was stopped, and she was discharged on oral prednisolone 5 mg daily, together with clonazepam and sodium valproate.

At 3 months of age the child was readmitted for repeat EEG. Her infantile spasms were under control but she had clonic type of fits. She had still not achieved social smile and the visual problems persisted. Repeat EEG showed generalised changes without burst suppression (Figure 2).

Figure 2. EEG after the age of 3 months.

Discussion

Ohtahara syndrome or early infantile epileptic encephalopathy (EIEE) is a malignant form of epilepsy (2). Affected infants may be neurologically normal in the early neonatal period and infancy, but subsequently develop increasingly frequent fits. The seizures are flexor, extensor or asymmetrical types of tonic spasms, similar to infantile spasms. These are resistant to treatment, mental retardation is invariable, and cerebral palsy appears in half the cases (1,2,3). The EEG shows a characteristic burst suppression pattern alternating with episodes of spikes and sharp waves. The runs of spikes and waves last 5 to 10 seconds followed by 4 to 12 second periods of burst suppression. This EEG pattern may change to *hypsarrhythmia* later. Many infants with EIEE have *cerebral dysgenesis*, including major brain malformations (1,4). It is rarely associated with neurometabolic causes (5).

Ohtahara and colleagues have stressed the age specific nature of certain epileptic syndromes of infancy and childhood (3). In their description, EIEE is the earliest (onset 1 to 3 months) and the most malignant of the three main age specific epilepsies. The other two of the triad are West syndrome (up to 1 year) and Lannox-Gastraup syndrome (after 1 year). Early myoclonic (neonatal) encephalopathy is another form characterised by a similar EEG pattern to EIEE. But its onset is in the first month of life and the dominant seizure type is paroxysmal fragmentary myoclonus (1,2,3,6).

In the child presented here, seizures first started at the age of two months and the dominant seizure pattern was flexor infantile spasms. Apart from not achieving social smile and not following objects at the age of 3 months she appeared to be neurologically normal. A CT scan of the brain showed early cerebral atrophy. Though her initial response to ACTH was good, she later developed clonic seizures two weeks after stopping ACTH. These patients invariably develop mental retardation. This child's future is uncertain and she will be followed up in the clinic.

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