Current Practice

CHILD CARE IN GENERAL PRACTICE

Convulsions in Infancy and Childhood—Part I

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The family doctor may never witness the events described by a worried mother as convulsions. On the other hand he may suspect that signs described to him are strongly suggestive of convulsions though this possibility has never been thought of by the family. The relatives' description of a grand-mal attack or of Jacksonian fits are often virtually conclusive, but accounts of the signs of petit mal are seldom elicited except by direct questions. Descriptions of myoclonic, akinetic, and narcoleptic seizures are rarely reliable unless based on observation of a number of seizures.

Was It a Convulsion?

Difficulties in diagnosis based on retrospective accounts arise most commonly from simulation of convulsions by syncopal or breath-holding attacks, or at puberty by hysterical attacks.

Fainting rarely occurs in the recumbent position, frequently takes place in a warm stagnant atmosphere, and differs from a convulsion in being characterized by pallor and superficial chilling and not by flushing or incontinence. It is commonest in girls approaching puberty, and fatigue, rapid growth, emotional lability, and inadequate nourishment are contributory factors.

Breath-holding attacks are encountered most frequently in children of under 5 years of age who have already given rise to problems of management. An attack is almost invariably preceded by emotional disturbance occasioned by fright, correction, or frustration, and is signalled by a sudden cry. Unconsciousness, should it develop, is preceded, not followed, by cyanosis, and if prolonged sometimes culminates in a true convulsion, the child assuming an opisthotonic position before and not, as is more usual, after the occurrence of a convulsion. Exceptionally a mother's description of a small child's behaviour during or after masturbation may be mistaken for a fit. Convinced that there is good reason to believe that a child has had convulsions the family doctor has then to assess their significance.

Facts from the Parents

In obtaining a history and carrying out his subsequent examination the doctor is concerned with deciding whether the convulsions are symptomatic of underlying detectable disease or are asymptomatic (idiopathic), and, if symptomatic, whether of intracranial or extracranial disease. The age of the patient is important. Anoxia, birth injury, inhalation asphyxia, kernicterus, anomalies of the central nervous system in particular, and metabolic disturbances have to be considered in the newly born. Birth injuries, including subdural effusions, anomalies, metabolic disturbances such as tetany, hypo-

glycaemia, and those arising from poisoning, febrile convulsions, and myoclonic spasms have to be considered in later infancy. Convulsions in later childhood are rarely due to fever *per se* and call for detailed repeated examination to exclude infection, toxic encephalopathy—for example, nephritis, essential hypertension, lead-poisoning—and brain tumour.

Details should be obtained about previous convulsions and the circumstances in which they occurred, any difficulties experienced by the mother or baby in the perinatal period, and any accidents experienced by the patient at any time. Family predisposition to fits should be inquired into because though direct transmission from parent to offspring is not very common there is not infrequently a history of convulsions in more remote relatives. Account has also to be taken of the fact that it has been estimated that 50% of children with febrile convulsions have relatives who have had similar seizures in childhood without later signs of idiopathic epilepsy. If it is not already known to him the doctor should ask about the child's emotional make-up, any tendency to restlessness and lack of concentration, and any alteration in scholastic ability if attending school. A note should be made of recent contact with exanthematous and other infections and of any recent immunization procedures. Convulsions occasionally occur after vaccination against pertussis or smallpox and very exceptionally may be evidence of post-vaccinal encephalitis.

As a routine, inquiry should be made concerning disturbance of normal bowel or urinary function and of sleep rhythm, as this may have an aetiological or prodromal significance. An attempt should be made to elicit any suggestion that the convulsion was preceded by an aura or psychomotor disturbance. Petit mal can precede the onset of motor attacks by many months or years, and particular attention should be paid to any history of bizarre interruptions of play or speech. A note should be made of any time relationship between the occurrence of fits and the taking of meals, going to or awakening from sleep, menstruation, and watching television. Reliable clinical studies justify the view that some children who are very sensitive to intermittent photic stimulation are liable to convulse when watching television under normal circumstances, and that others who are less sensitive may convulse when viewing very near the screen. Any possible association with worm infestation, and in particular round-worm infestation, and with possible sun- or heat-stroke should not be disregarded. The possibility of parasitic infection—for example, cysticercosis or toxoplasmosis—may have to be considered, more especially if the parents have resided abroad.

Points on Examination

When he examines a child who has had a convulsion the doctor's initial findings will depend on the interval since it took place. The child may be apparently normal. By way of contrast the presence of local or generalized clonic movements, dilated pupils, or absence of abdominal reflexes with extensor

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response of the plantar reflexes confirms the diagnosis. In status epilepticus clonic movements may be continuous without recovery of consciousness. A temporary hemiplegia (Todd's paralysis) can follow a unilateral convulsion. Drowsiness, confusion, or even aphasia after a seizure contrasts with the alertness of the spasmophilic or anxious child. As he handles the child the doctor will note any difference in muscle tone and any tendency for disturbance to stimulate twitching movements. This is more likely to be seen in a baby, who should be examined for tautness or bulging of the fontanelle and for rigidity or objection to flexion of the neck. Allowance must always be made for the extent to which prematurity masks the severity of convulsive movements.

The presence of pyrexia should be noted and a search made for rashes involving skin or mucous membrane. Fever is an indication for excluding the presence of such conditions as otitis media, pharyngitis, pneumonia, pyelitis, meningitis, and sinus thrombosis. If findings are negative and the patient's age is less than 5 years the possibility of febrile convulsions may have to be considered. A febrile convulsion rarely occurs in the newborn or in children of more than 6 years of age, and usually develops as an isolated event simultaneously with, or only an hour or two after, the onset of fever. Stridulous breathing in an infant with any hint of rachitic bony changes should raise the question of spasmophilia and prompt investigation for tetany. Current experience suggests that this is most

involving the central nervous system may provide an explanation for fits, and any tendency for convulsions to occur before a meal or at the end of a long interval between meals should prompt consideration of hypoglycaemia.

Abnormalities in the urine may disclose a causal renal factor, and ophthalmological examination should be directed towards excluding changes in the retina and disks compatible with uraemia, cerebral tumour, tuberosc sclerosis, or toxoplasmosis. Convulsions are not, however, a common early sign of infratentorial tumours, which are the anatomical type usually encountered in children. In the relatively rare event of a tumour being situated in the cerebrum convulsions are common and indistinguishable from those seen in idiopathic epilepsy. Children who have recovered from tuberculous meningitis may develop convulsions at a later date, and in them calcified deposits are often to be seen in radiographs of the brain.

In an endeavour to pin-point diagnosis, findings on examination are considered against the background of the history. Even with a known predisposition to convulsions the need remains to try to determine the "trigger" factor. Relatively simple clinical explanations should be considered before more grave possibilities. In the words of an erstwhile Edinburgh teacher "the bird on the chimney may be a canary but is much more likely to be an ordinary sparrow." To attribute convulsions to reflex stimulation arising from constipation, worms, teething, and the like has been described as facile. Nevertheless, though the stimulation may not be reflex in character, and while worms and teething do not cause convulsions, clinically they do appear on occasion to favour convulsions in predisposed children.

Despite complete investigations the cause of many convulsions is not identified and resort is made to a diagnosis of idiopathic epilepsy. This is a frank confession of limited knowledge and any patient so diagnosed must be carefully reviewed at intervals to ensure the earliest possible recognition of underlying disease should signs appear.

Too much importance should not be attached to differentiating major from minor epileptiform manifestations, as, though one form may predominate, both often occur together and minor attacks may precede the onset of major events by many years. Though a localized disturbance on an isolated occasion is not certain evidence of a focal lesion, recurrence requires re-examination for focal organic disease. In idiopathic epilepsy in children an aura is not very common, a cry does not always precede a major seizure, and tongue-biting and incontinence are encountered less frequently than in adults. Somato-sensory disturbance consisting of pain, numbness, or sensations of movement starting in the abdomen and passing to the head via the thorax is a form of aura for which to be on the alert. Psychomotor seizures are infrequent in children and the type most likely to be seen consists of gradual loss of postural control, the child extending an upper limb before turning to one side and falling gradually, thereafter remaining unconscious for several minutes.

Delay in diagnosing epilepsy is most likely to result from failure to recognize the occurrence or significance of nocturnal seizures when falling asleep or at the time of waking. Myoclonus of progressive type may begin in later childhood as nocturnal attacks, and bed-wetting may be the first or only sign of an epileptic attack in a child who has acquired complete sphincter control.

[The second part of this article will appear in next week's issue.]

FIG. 1.—Adenoma sebaceum in child with tuberosc sclerosis.

likely to be encountered in coloured immigrants. Pronounced asymmetry of face and/or cranium may provide outward evidence of cerebral agenesis, a facial naevus of an intracranial haemangioma, superficial pigmented areas of neurofibromatosis, and facial acne with butterfly distribution of tuberosc sclerosis (Fig. 1). The presence or a history of hydrocephalus, microcephaly, cerebral palsy, subnormal mentality, or any anomaly