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Febrile Seizures

Sheila J. WALLACE(*)

ÖZET

Ateşli Havaleler

Ateşli havaleleri olan hastaların büyük çoğunluğunun genel durumları oldukça iyidir. Ancak öncesinde veya olay sırasında çok hafif de olsa gelişimsel bir bozukluğu olan ve/veya ailede epilepsi öyküsü bulunan hastalar epilepsinin de dahil olduğu çeşitli nörolojik ve kognitif sorunlarla karşılaşma riskine sahiptirler. Sonraki jeneralize nöbetler tekrarlayıcı, kısa, jeneralize ateşli havaleleri ilişkilidir, sonraki parsiyel epilepsiler ise uzamış lateralize ateşli havaleleri izleyebilir. Ateşli havalelerin tedavisi tekrarlara yönelik profilaksi şeklinde tercih edilmelidir. EEG prognozu belirleme açısından yardımcı değildir. Birçok olguda daha sonraki gelişim tamamiyle normal olsa da ateşli bir nöbet olası bir nörolojik sorun açısından uyarıcı olarak da ele alınmalıdır.

Anahtar Söcükler: *Ateşli havale*

SUMMARY

For the majority of children with febrile seizures, the outlook is very good. However, those who have prior or persisting neurodevelopmental disorders, even if these are comparatively minor, and/or have positive family histories for seizures run an increased risk of continuing neurological and cognitive problems, including epilepsy. Later generalised epilepsies are associated with recurrent, brief generalised febrile seizures, and later partial epilepsies are likely to follow prolonged lateralised febrile seizures. Treatment of febrile seizures as they occur is preferred to attempts at prophylaxis of recurrences. The EEG does not help in prognosis. The febrile seizure should be used as an alerting sign for possible neurological problems, even though in most cases subsequent progress is entirely normal.

Key words: *Febrile seizures*

INTRODUCTION

The seizure precipitated by a febrile illness is the commonest form of epileptic attack. For most children with febrile seizures, no other epileptic phenomena occour, but a small and important minority have continuing neurological symptomatology. It is important to identify those children in whom the first febrile seizure is an indication of underlying neurological problems which are likely to persist; and, to appropriately reassure the parents of those whose seizures seem entirely benign. These aims can be achieved only if the antecedents of the seizure, its characteristics and the neurodevelopmental status of the child at presentation are fully explored. The natural histories of children with febrile seizures have been explored in detail in a recent monograph [1].

DEFINITION

It is fashionable to restrict the term 'febrile seizure' to the simplest manifestations and to exclude children with obvious neurological disabilities or intracranial infections from this term. However, there is no evidence that the actual seizure differs in relation to the underlying illness; and, some evidence that the pre-seizure state is the most important determinant of outcome. Nevertheless, both particularly severe illness and prolonged seizures are also of obvious relevance. In the circumstances, it is useful to start with the concept that a febrile seizure is an epileptic attack precipitated by any illness in which the body temperature exceeds 38°C. It is important to exclude other paroxysmal disorders which may occur in early childhood [2].

EPIDEMIOLOGY

Febrile seizures occur in about four per cent of children[3,4]. Social class and race are irrelevant for the first seizure. The risk for children of parents who have had febrile seizures is four times that in the general population: male children of affected mothers are most at risk. The prevalence is eight per cent in siblings of affected probands. The risk

(*) Department of Paediatric Neurology, University Hospital of Wales, Heath Park, Cardiff CF4 4XW, United Kingdom.

ef, certainly of less than 30 minutes' duration, and for most authors of less than 10 or 15 minutes' duration, completely generalised an occur only once during the precipitating illness. Complex febrile seizures are prolonged (usually 15 minutes or more in duration), have partial features or are repeated within the same illness. The terms complicated, severe or non-simple are sometimes used to describe complex febrile seizures. Characterisation of the seizures themselves depends on the assiduity of the observer: inter-observer agreement is good for duration and numbers of seizures, but is only fair when partial features require identification[17]. Overall, 70 per cent of febrile seizures are generalised. Lateralised seizures suggest that neurological function was abnormal before the ictus, and tend to occur in younger children; in those with negative family histories; and, where adverse pre- and perinatal events have been identified.

ACUTE NEUROLOGICAL FINDINGS

Asymmetrical findings are those of most significance: these are obvious in about one-eighth, and subtle in approximately one-third of children[1]. Usually, asymmetries involve pyramidal tract functions. An acute, usually transient, hemiparesis following a prolonged lateralised febrile seizure is of particular significance. Transient cerebellar ataxia, which is seen occasionally, is probably more a function of the underlying illness than the seizure.

INVESTIGATION AT PRESENTATION

Virtually all acute investigations are relevant to the underlying illness rather than the seizure. Lumbar puncture remains the most controversial[1,16]. Attempts to define those children in whom examination of the cerebro-spinal fluid is unnecessary have never been totally successful, and it is probably safest to do lumbar punctures in all children presenting when aged less than 18 months, in addition to those who have meningism.

Some of the chemical constituents of the cerebrospinal fluid alter in relation to both seizures and fever. The relevance of such alterations is often obscrue, and has been discussed in a recent review (18). Raised lactate levels are found in association with complex, but not simple, seizures; and, gamma-aminobutyric acid (GABA) levels are lower when seizures are prolonged. Fever, rather than seizures, is responsible for raised prostaglandin E-2 levels.

Plain skull X-rays are unhelpful and the roles of acute CT or NMR scans have not yet been determined. Early MRI may well be relevant in prolonged lateralised seizures.

Electroencephalographs (EEGs) recorded in the acute period reflect the previous neurological state and the underlying illness and give no clue to the prognosis[1]. Paroxysmal abnormalities which may be found acutely tend to be age-related rather than of diagnostic help[19]. In short, acute EEGs should not be requested unless they are considered to be of use in the management of the precipitating illness.

ACUTE THERAPY

Seizure control is the first priority, but management of the underlying illness, particuarly reduction of the body temperature, is also important. Ninety per cent of febrile seizures stop spontaneously. For those still in progress at the time of presentation, treatment as for status epilepticus is indicated, with rectal or intravenous diazepam the first choice. For the control of fever, antipyretic medication, preferably with paracetamol, is more effective, and pleasanter for the child, than physical cooling[20,21].

PATHOLOGICAL AND PATHOPHYSIOLOGICAL FEATURES

Short-echo-time proton NMR can produce biochemical spectra of the cortical gray matter[22]. It is hoped that in the future this technique might be applied to the investigation of the metabolic and biochemical features of both fever alone and febrile seizures. The central histaminergic neuron system may be involved in inhibition of febrile seizures [23], and the GABA ergic system in reduction of the threshold [24].

Mesial temporal sclerosis (MTS) is related to prolonged lateralised febrile seizures [25-28]. Initial beliefs that MTS is a consequence of the febrile seizu-

res are now being challenged by suggestions that prior anomalies predispose to both lateralisation and long duration of the initial attack [25].

RECURRENCE OF FEBRILE SEIZURES: PROPHYLACTIC THERAPY

Seizures recur in association with subsequent febrile illnesses in 30 to 40 per cent of all cases [1, 4, 6, 7, 29 - 33].

However, some children are at more risk than others. Factors leading to significantly increased recurrence rates are: low social class, young age at the first seizure, family history positive for seizure disorders, continuing neurological abnormality, and / or complex initial seizures. The more risk factors present, the greater the likelihood of recurrence [34]. When analysed in a multivariate manner, children with multiple initial seizures, fever of less than 40°C and positive family histories are at most risk; and, those with simple initial seizures, fever of more than 40°C and negative family histories at least risk of recurrence [7].

Prophylaxis against recurrences using long-term antiepileptic drugs in now outmoded. In any case, it was of very doubtful efficacy [6, 31, 35]. In addition, the use of intermittent prophylactic therapy at the onset of fever is no longer recommended [31, 36]. Prevention of recurrences, when compared with treatment of the seizures when they occur, does not alter the outcome for subsequent epilepsy, neurological status, and / or cognitive and scholastic abilities [37]. Thus provision of rectules of diazepam in solution, to be given at the onset of subsequent seizures, is currently the preferred management.

DEVELOPMENT OF NON-FEBRILE SEIZURES AND EPILEPSY

Epilepsy (recurrent unprovoked seizures) is significantly commoner amongst children who have had febrile seizures than in the general population. Using life-table cumulative methods, it is estimated that seven per cent of those who have febrile seizures will have at least one unprovoked attack by the age of 25 years [38]. About 85 per cent of those affected will have their first unprovoked seizure within four years of the attacks precipitated by fever. Febrile seizures precede epilepsy in 15 per cent of children with chronic seizure disorders [39].

The commonest types of non-febrile seizures experienced are generalised tonic-clonic; absence; and, partial with automatisms or other motor symptomatology [1, 29, 40, 41]. Children who later present with childhood absence epilepsy, myoclonic absences, severe myoclonic epilepsy in infants, benign partial epilepsies, and, juvenile myoclonic epilepsy may have had previous febrile seizures [41], but, for individual children, progression to one of these syndromes is extremely rare. The antecedents of later partial or generalised epilepsies are glifferent. Partial epilepsies are most likely to follow prolonged lateralised febrile seizures; where as, the child who has a positive family history and recurrent, brief generalised febrile seizures is at increased risk of a later generalised epilepsy.

LONG-TERM NEUROLOGICAL OUTLOOK

Changes in the neurological status at the time of the initial febrile seizure are very rare, but a small percentage of chidren (no more than five per cent of those admitted to hospital) may acquire new lateralising signs [1]. Mild or minimal pyramidal signs, cerebellar ataxia, dyspraxia, speech delay and difficulties with motor aspects of self-care are commoner than would be expected [1, 14].

LONG-TERM EEG CHANGES

The EEG is a poor predictor of future epilepsy. It is recognised that abnormalities which are found at presentation are most likely to reflect changes secondary to the underlying illness, or the previous neurological status, and, later changes, particularly those which are generalised and paroxysmal in nature are usually age-dependent, rather than necessarily of pathological significance. However, persistent, lateralised slower frequencies may be precursors of focal spike discharges [1]. Although not always of obvious clinical significance, centro-temporal spikes, abnormal theta activity, 3/sec spike-wave and photo-sensitivity are observed more often than would be expected in an unselected population [1, 41, 42].

COGNITIVE ABILITIES

Overall cognitive abilities are comparable with those in the general childhood population, but spe-

cific learning difficulties, particularly reading problems, are commoner than expected; as are atenitonal defects [1]. Most children with cognitive and scholastic difficulties have evidence for some unevenness or delay in development prior to the initial febrile seizure; but, in a small proportion, prolonged initial seizures seem contributory [13].

BEHAVIOURAL PROBLEMS

Although an increase in behavioural difficulties such as aggressive outbursts, temper tantrums, overactivity, sleeping problems, unsociability, enuresis and encopresis is reported [13, 14], it seems probable that overall ability is the most important determinant of subsequent behaviour.

SOCIAL ASPECTS

Many of the parents think that their children are dying at the time of febrile seizures [43]. Subsequent management of the children may include increased watchfulness, particularly during febrile illnesses; and, the quality of the parents' sleep is likely to deteriorate. Parental behavioural symptoms increase if seizures recur [43]. Informed counselling should be available for all parents.

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