

After 28 days urine cultures showed cytopathic changes characterised by cytoplasmic vacuolisation. Electron microscopy of the supernatant showed icosahedral virus particles with a diameter of about 45 nm. Supernatants from the urine cultures agglutinated human type O erythrocytes and the agglutination could be inhibited by a specific anti-BK virus serum. No cytopathic effect was observed in control cells and throat swab cultures. Seroconversion against BK virus between the third and 14th day of the disease (haemagglutination inhibiting antibody titres 1:8-1:256) was shown. Similar titres were obtained when the patient's virus was used as the antigen. No appreciable rises in antibodies to adenovirus, respiratory syncytial virus, influenza virus types A and B, *Mycoplasma pneumoniae*, and *Chlamydia psittaci* were observed as measured by the complement fixation test. Analysis of the viral DNA by cleavage with several restriction endonucleases showed a pattern compatible with BK virus-like human papovaviruses.

### Comment

This report describes seroconversion against BK virus and subsequent isolation of virus from the urine of a child with acute tonsillitis. The child's humoral and cellular immunity was not impaired and no immunosuppressive treatment was given. Our findings should encourage further attempts to isolate BK virus from patients with acute respiratory disease.

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(Accepted 31 July 1981)

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## Prognosis of isolated seizures in adult life

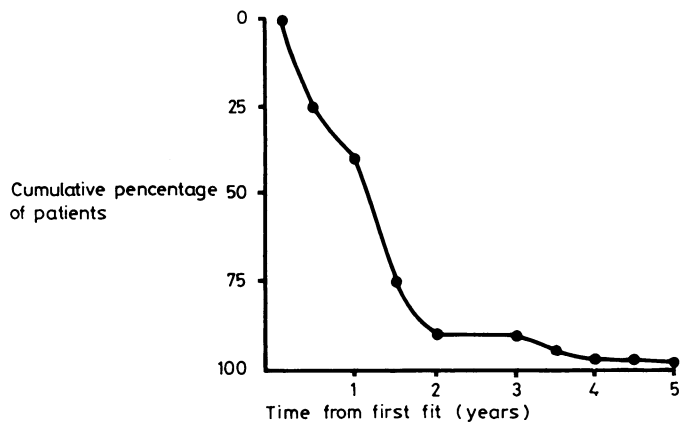
An isolated epileptic fit is a matter of concern to the patient, his family, and his doctor. While the problem for the doctor is to determine any underlying cause, the patient is naturally anxious about further fits. We report here our findings on the follow-up of a group of 70 adults who suffered a single fit.

### Subjects, methods, and results

We analysed the notes of all patients aged 16 to 65 with a single blackout referred to the Regional Neurological Centre, Newcastle General Hospital. Only those referred before 1978 and who had suffered a definite witnessed major convulsion were included in the study. Patients whose convulsion had been associated with head injury or drug overdose or who had been started on anticonvulsants were excluded. The suitable patients were contacted and their notes analysed for prognostic indicators.

Eighty-four patients fulfilled the criteria, of whom 14 could not be contacted. Of the remaining 70, 30 were women and 40 men with a mean age of 36. The mean time between the fit and the outpatient visit was six and a half weeks (range two to 10 weeks but 80% were between five to seven weeks) and the mean follow-up period was 4 years 9 months (range three to 10 years). Twenty-seven (39%) patients subsequently developed epilepsy while 43 (61%) had no further fits. The time intervals between the first and second fits are shown in the figure.

There was no difference between those who had single and recurrent fits in age, sex, or period of follow-up. In three (12%) of the former and nine (22%) of the latter group there were possible precipitating factors and these were the same for the two groups—namely, exertion, infection, alcohol, lack of sleep, and anaesthesia. None of the patients had a family history of epilepsy or any abnormal neurological signs. Thirty-nine per cent (15 out of 38) of those who had single fits and 68% (17 out of 25) of those who had recurrent



Cumulative percentage of 27 patients who developed epilepsy and time between first and second fits.

fits had abnormal electroencephalograms (EEGs). This difference was significant ( $\chi^2$ ; 1 df = 4.91;  $p < 0.05$ ). The abnormalities were the same in the two groups and were either non-specific abnormalities, focal slowing over the temporal lobe, or generalised slow activity. One patient, aged 20, who had a second fit two months after the first was subsequently found to have a cerebral tumour (grade II astrocytoma).

### Comment

The development of epilepsy in adult life is a sinister event, for about 10% of such patients will turn out to have an intracranial tumour.<sup>1</sup> On the other hand, a single fit is usually regarded as a one-off occurrence, not warranting concern or investigation.<sup>2</sup> Little has been written on the prognosis of patients presenting with an isolated fit. Clearly all first fits are "isolated" until a second one occurs and then the patient is, by definition, suffering from epilepsy. We thought that a convenient time to label a fit as isolated was at the outpatient visit, about six weeks after the event.

This study, broadly confirming other reports,<sup>3,4</sup> shows that 39% of patients with an isolated fit developed epilepsy after a mean follow-up period of 4 years 9 months. Moreover, significantly more of this group had an abnormal EEG at the time of their first fit. Thus, though a single EEG recording is of limited value in diagnosing epilepsy, it is a useful indicator as to the likelihood of further fits.

An interesting finding is that the risk of further fits remains high for two years after an isolated fit. Thus the chances against a second fit six weeks, six months, one year, and two years after an isolated fit are respectively 2.6:1, 3.2:1, 4.1:1, and 15:1. Given an incidence<sup>5</sup> of 20 per 100 000, the annual chance of an adult having a fit is one in 5000.

We believe that an adult with an isolated fit should be investigated in the same way as an adult with epilepsy of recent onset. Though six months is a reasonable time to withhold a driver's licence, the patient should be warned that the risk of further fits remains high for another 18 months.

Dr I Mosquera is supported by Fundayacucho, Venezuelan Scholarship. Requests for reprints should be addressed to Dr P G Cleland, Department of Neurology, Newcastle General Hospital, Westgate Road, Newcastle upon Tyne NE4 6BE.

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(Accepted 27 July 1981)

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