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Echo 11 conjunctivitis

D. J. SPALTON, S. PALMER, AND L. C. LOGAN

From the Departments of Ophthalmology and Virology, St Thomas's Hospital, London SE1

SUMMARY We describe a case of Echo 11 virus infection producing a moderately severe conjunctivitis in a laboratory worker who had handled infected material. This virus has previously been known to cause systemic disease, sometimes fatal, in children.

Many viruses can cause conjunctivitis, but identification of the causative virus has therapeutic implications in only a small number of cases. However, the epidemiological consequences can sometimes be important.

We report a case of Echo 11 viral conjunctivitis without systemic symptoms in a laboratory technician who had handled infected material. This endemic virus is usually associated with aseptic meningitis and gastrointestinal or respiratory illnesses in infants, and can be fatal.[1] The only other reported case of this virus producing a conjunctivitis was also in a laboratory worker,[2] and there is evidence that infection is spread by the droplet and contact routes with an incubation period of a few days.[3]

Case report

A 23-year-old medical laboratory scientific officer was seen on 14 December 1978 complaining of redness, soreness, and stickiness of both eyes on waking that morning. She had no previous ophthalmological complaints, but 5 days previously had had an upper respiratory infection which persisted for 2–3 days. Three days before the onset of her eye symptoms she had been handling material which was later shown to be infected with Echo type 11 virus.

On examination her visual acuity was 6/5 in both eyes. There was a purulent watery discharge from both eyes and mild conjunctival injection. Both upper tarsal conjunctivae were covered with a papillary reaction and fresh moderate sized follicles. The lower tarsal conjunctiva had fewer follicles and papillae and some small haemorrhages. There was no keratitis, and the right preauricular gland was enlarged.

She was treated with chloramphenicol drops to both eyes, and 4 days later she had improved considerably. The haemorrhages had absorbed, there were fewer follicles, and more papillae had appeared on the upper tarsal conjunctivae. By 4 January 1979 the patient was symptom-free. There were a few remaining follicles and papillae on the tarsal conjunctivae, but at no stage did the patient develop any keratitis.

INVESTIGATIONS

The haemoglobin and white cell counts were normal at the onset of her illness.

At presentation conjunctival swabs were collected in virus transport medium and immediately inoculated into primary cynomolgus monkey kidney (CMK), human embryonic lung fibroblasts, and HeLa cell cultures at 37°C. The following day a cytopathic effect was noticed in the human lung fibroblast cultures, and the material was passaged into CMK culture, where 3 days later an enterovirus-like cytopathic effect was seen. Electron microscopy (after centrifuging at 100 000 *g* for 30 minutes) showed small round virus particles (Fig. 1). An Echo 11 virus was identified from the cell culture by neutralisation with specific antisera.

Serum taken at the onset of the illness and 3 weeks later showed a significant rise in neutralising antibody titre from 1:20 to 1:80 against Echo 11.

Discussion

Viral isolation and serological studies confirmed that the patient experienced an Echo 11 virus conjunctivitis. Three days before her illness she had handled material infected with the same virus, and this was probably the source of her infection. The

Correspondence to Mr D. J. Spalton, Eye Department, St Thomas's Hospital, London SE1.

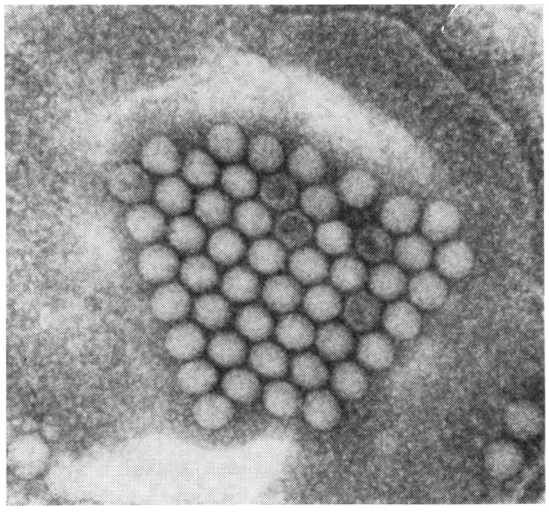

Fig 1 *Echo 11 virus particles from the patient* (×193 000).

initial ocular symptoms were moderately severe, but the infection resolved rapidly on nonspecific treatment with no further ocular consequences.

Echo viruses form part of the enterovirus group, the other main subtypes being the polio and Coxsackie groups. Because of the importance of the polio viruses much work has been done on the epidemiology of this group and their associated diseases. Occasionally other enteroviruses such as Coxsackie B2[2] and Echo 7[4] have been reported to cause conjunctivitis. However, two pandemics of enterovirus infection have occurred. The first in Singapore in 1970 was caused by Coxsackie A24,[5] and later acute haemorrhagic conjunctivitis was shown to be caused by enterovirus 70.[6]

Many Echo 11 infections are subclinical, but the diseases it usually produces are aseptic meningitis and gastrointestinal or respiratory illness. Echo 11 infections are not uncommon. There appears to be a high incidence in 2 successive years, occurring in a 5-year cycle. In 33 weeks of 1978, 445 infections were reported; most of them were in children of under 4 years of age, and 9 children died.[7] An epidemic of Echo 11 infection in a baby unit killed 3 neonates of 9 infected; infection was thought to be spread by droplet and hand contact.[3]

The identification of viruses that produce conjunctivitis remains a problem. Positive cultures are obtained only from a small percentage of cases that are likely to have a viral origin, and it is usually impossible to identify the causative virus from the clinical appearance of the conjunctiva. The various adenovirus subtypes and herpes simplex are the commonest viruses isolated, but enteroviruses are widely distributed and some types are known to produce conjunctivitis. Whether or not they play any significant role in endemic viral conjunctivitis is unknown. It might be important to recognise that conjunctivitis can be the only manifestation of infection with Echo 11 virus and that there might therefore be a risk to small children from those involved in their care and handling if they were so infected.

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