

A COXSACKIEVIRUS TYPE A24 EPIDEMIC CONJUNCTIVITIS IN BRUNEI

MASNI A. BAHRIN, N.D. JOSHI and M. YIN-MURPHY*

General Hospital, Bandar Seri Begawan, Brunei and *Department of Microbiology, University of Singapore, Singapore.

INTRODUCTION

An epidemic of acute conjunctivitis occurred in the state of Brunei in August 1975 and lasted to January, 1976. Over 13,059 cases which amounted to approximately 10% of the population were treated by ophthalmologists in the two main General Hospitals in the state (Bandar Seri Begawan and Kuala Belait). The report of cases studied are presented herein.

MATERIALS AND METHODS

Clinical Observation : Patients complained of grittiness and a foreign body feeling in the eye. The eye affliction was characterised by a sudden onset of conjunctivitis in one eye or both eyes at the same time. Swelling of eye lids with chemosis, folliculitis and subconjunctival haemorrhage of varying degrees were observed. In a few cases, superficial keratitis was present. The disease is self-limiting and generally, recovery was seen within a week. Some patients complained of persistent blurring of vision for sometime. Antibiotics (tetracycline with polymyxin or neomycin, gramicidin and polymyxin, or chloramphenicol) used for treatment of secondary bacterial infections were found to be helpful.

Laboratory Investigations : Conjunctival scrapings and sera were despatched in a thermos-flask containing dry ice via plane to the Department of Microbiology, Faculty of Medicine, University of Singapore. Laboratory tests were carried out by methods previously described (Yin-Murphy, 1972).

Virus Isolation : Conjunctival scrapings were obtained with sterile disposable blades and the scrapings suspended in 8.0 ml to 10.00 ml of Hanks' Balanced Salt Solution (B.S.S.). All specimens were kept frozen at 0°C until despatch. Thirty-four conjunctival specimens were passed in HeLa cell cultures. Virus isolates were identified by neutralisation tests in HeLa cell cultures with monkey immune sera to Singapore Epidemic Conjunctivitis 1970 (coxsackie virus type A24) virus and Singapore Epidemic Conjunctivitis 1971 (enterovirus type 70) virus.

Serology : Approximately 5.0 ml of blood was taken from each patient during the acute stage of infection on the first visit to the clinic. A second blood sample was taken approximately 12 to 24 days after the first specimen. The sera were kept frozen at 0°C until despatch. Thirteen paired sera were tested for neutralising antibody to Singapore Epidemic Conjunctivitis 1975 virus, a strain which is antigenically similar to the Singapore Epidemic Conjunctivitis 1970 (coxsackievirus type A24) virus and to Singapore Epidemic Conjunctivitis 1971 (enterovirus type 70) virus.

RESULTS

The laboratory findings are shown in Table 1. Eighteen virus isolations were made from 34 conjunctival specimens. All the 18 isolates were identified as coxsackievirus type A24. A two to eight-fold neutralising antibody rise to Singapore Epidemic Conjunctivitis 1975 virus was detected in 11 of the

Table 1
Laboratory findings.

No.	Isolation	Paired sera taken on	Neutralizing antibody titre against *SEC/75 (Cox A24)
1	Cox A24	No paired sera	Not done
2	Cox A24	No paired sera	Not done
3	Negative	No paired sera	Not done
4	Cox A24	6. 9. 75	< 1/20
		29. 10. 75	1/40
5	Cox A24	6. 9. 75	1/20
		22. 10. 75	1/40
6	Cox A24	No paired sera	Not done
7	Cox A24	6. 9. 75	1/20
		18. 10. 75	1/80
8	Negative	No paired sera	Not done
9	Negative	No paired sera	Not done
10	Cox A24	6. 9. 75	< 1/20
		20. 10. 75	≥ 1/160
11	Cox A24	No paired sera	Not done
12	Cox A24	No paired sera	Not done
13	Cox A24	No paired sera	Not done
14	Negative	No paired sera	Not done
15	Negative	No paired sera	Not done
16	Cox A24	No paired sera	Not done
17	Cox A24	No paired sera	Not done
18	Cox A24	No paired sera	Not done
19	Negative	10. 9. 75	< 1/20
		29. 10. 75	≥ 1/120
20	Cox A24	6. 9. 75	120
		20. 10. 75	1/180
21	Negative	10. 9. 75	1/20
		29. 10. 75	1/80
22	Cox A24	6. 9. 75	< 1/20
		21. 10. 75	< 1/20
23	Negative	10. 9. 75	< 1/20
		29. 10. 75	1/80
24	Negative	No paired sera	Not done
25	Negative	9. 9. 75	< 1/20
		29. 10. 75	1/20
26	Negative	9. 9. 75	< 1/20
		29. 10. 75	1/80
27	Negative	No paired sera	Not done

Table 1 (Cont'd)

No.	Isolation	Paired sera taken on	Neutralizing antibody titre against *SEC/75 (Cox A24)
28	Negative	No paired sera	Not done
29	Negative	No paired sera	Not done
30	Cox A24	6. 9. 75 21. 10. 75	1/20 1/80
31	Negative	No paired sera	Not done
32	Cox A24	6. 9. 75 22. 10. 75	1/20 1/80
33	Negative	No paired sera	Not done
34	Cox A24	No paired sera	Not done

No neutralizing antibody to SEC 1971 (Enterovirus type 70) virus was detected in these patients at serum dilutions tested.

* SEC/75 = Singapore Epidemic Conjunctivitis 1975 (coxsackievirus type A24) virus.

13 paired sera tested. None had neutralising antibody to Singapore Epidemic Conjunctivitis 1971 (enterovirus type 70) virus.

DISCUSSION

The clinical features of the August 1975 to January 1976 epidemic of acute conjunctivitis in Brunei resembled those described by Lim and Yin-Murphy (1971), Yin-Murphy and Lim, (1972). Subconjunctival haemorrhage was observed only in a small percentage (1%) of cases seen during this Brunei epidemic of acute conjunctivitis. In the picornavirus epidemic conjunctivitis which occurred in Singapore in 1970 and 1971, subconjunctival haemorrhage was observed also in a small percentage of patients. Keratitis was rare. The disease was self-limiting and recovery was seen within a week in the majority of cases.

The virus responsible for this epidemic of acute conjunctivitis in Brunei was found to be antigenically similar to the Singapore Epidemic Conjunctivitis 1975 (coxsackievirus type A24) virus. The virus responsible for the

epidemic in Singapore in June - October 1975 (Yin-Murphy *et al.*, 1976) could have initiated the epidemic in Brunei.

Serological findings once again substantiated the role of the Singapore Epidemic Conjunctivitis 1970 (coxsackievirus type A24) virus in the disease syndrome variously known as the "Epidemic Haemorrhagic Conjunctivitis" (Chatterjee *et al.*, 1970), "Picornavirus Epidemic Conjunctivitis" (Yin-Murphy, 1972; Yin-Murphy and Lim, 1972) and "Acute Haemorrhagic Conjunctivitis (A.H.C.)" (Sugiura *et al.*, 1972). Furthermore, it is certain now that the picornavirus epidemic conjunctivitis which occurred in Singapore in 1970 caused by the Singapore Epidemic Conjunctivitis 1970 (coxsackievirus type A24) virus is not an isolated incidence peculiar to Singapore. The virus has since been isolated from similar epidemics in Hong Kong in 1971 together with enterovirus type 70 (Chang, W.K. pers. comm.) and in the recent epidemic in Malaysia (Tan, D., pers. comm.) apart from Brunei.

SUMMARY

The paper reports on a coxsackievirus type A24 epidemic of acute conjunctivitis in Brunei. The role of the Singapore Epidemic Conjunctivitis 1970 (coxsackievirus type A24) virus in the new disease syndrome variously known as the "Epidemic Haemorrhagic Conjunctivitis", "Picornavirus Epidemic Conjunctivitis" and "Acute Haemorrhagic Conjunctivitis" is again established.

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REFERENCES

- CHATTERJEE, S., QUARCOOPOME, C.O. and APENTENG, A., (1970). An epidemic of acute conjunctivitis in Ghana. *Ghana Med. J.*, 9 : 9.
- LIM, K.H. and YIN-MURPHY, M., (1971). An epidemic of conjunctivitis in Singapore in 1970. *Singapore Med. J.*, 12 : 247.
- SUGIURA, S., OCHI, M., KONO, R. *et al.*, (1972). Outbreak of acute haemorrhagic conjunctivitis (A.H.C.) in Hokkaido. *Acta Soc. Ophthal. Jap.*, 76 : 424.
- YIN-MURPHY, M., (1972). An epidemic of picornavirus conjunctivitis in Singapore. *Southeast Asian J. Trop. Med. Pub. Hlth.*, 3 : 303.
- YIN-MURPHY, M. and LIM, K.H., (1972). Picornavirus epidemic conjunctivitis in Singapore. *Lancet*, ii : 857.
- YIN-MURPHY, M., LIM, K.H. and HO, Y.M., (1976). A coxsackievirus type A24 epidemic and acute conjunctivitis. *Southeast Asian J. Trop. Med. Pub. Hlth.*, 7 : 1.