Epidemiology

BORNHOLM DISEASE IN CORNWALL, 1955

by

F. H. STAINES, M.R.C.S., L.R.C.P.

Callington

C. R. CHEADLE, M.B., B.S., D.Obst. R.C.O.C.

Gunnislake

This is the record of an epidemic of Bornholm disease which occurred in two practices in Cornwall in 1955. The practices covered about 7,500 persons and an area of over 100 sq. miles. Altogether 50 cases were seen in 6 villages and 5 schools; 8 villages and 8 schools escaped infection.

The ages ranged, with the exception of one male aged 66, from 4 to 40 years. Only 7 cases occurred between the ages of 10 and 25. Thirty-six were schoolchildren and 14 adults. Males predominated in the ratio of 2.3:1. (35 males: 15 females.)

The epidemic started on 13th June 1955 (B-day) when 2 cases, aged 7, were seen at village **A**. These children had been with others on a school coach-outing two days previously, 11th June 1955. (B-day minus 2.) Within a week there were a dozen cases among children of the same age, school, and group of council houses, and the first adult fell ill. In all, 18 cases were recorded.

On 23rd June 1955 (B-day plus 10) the first case was seen in village **B** (half a mile from **A**), and was followed by 5 others.

On 26th June 1955 (B-day plus 13), the first case occurred in village **C**, 4 miles distant, in a pre-school child whose father was a bus-conductor. This case was followed by 15 more, mainly among the family and neighbours.

On 25th July 1955 (B-day plus 42), the first case was seen in another village **D**, being in turn followed by 8 more cases. This village is only 2 miles from village **A**, but is a self-contained unit or end-of-the-road village.

About five mild cases (not requiring a visit at their homes) were seen in a fifth village **E** (5 miles from **A**) in the middle of July, but were unfortunately not recorded. One case occurred in village **F**, a further two miles west, on 14th July 1955 and is included in the total.

The geographical features, and the villages which escaped, are shown on the plan attached.

Clinical Features

The most prominent features were: pain, pyrexia and tachycardia.

The *pain* was the most important feature in the majority of cases. It was severe and rapid, even sudden, in onset; one boy of 6 fell over in the street while walking with his mother and lay screaming until he was removed in a car. The site was invariably central trunk, between the nipple line and the umbilicus, was usually in the right side, and anterior rather than posterior.

One feature of the pain was characteristic and of use in the differential diagnosis. In every case when the pain was either stated, or noticed, to be related to movement—respiratory or locomotor—such relationship was not consistent. Each patient was capable of performing, during the course of examination, the precipitating movements several times both with, and without, pain. This inconstancy is at least in our experience contrary to the normal observations in pleuritic, pericardial, appendicular, or renal pain.

The *pyrexia* was frequently out of proportion to the mildly flushed or almost normal appearance of the patient and almost invariably over 100°F. ; in a number of cases it was over 104° F.

The *pulse rate* was frequently over 100 and in a few cases reached 160 per minute. We think it fair to say that the adults showed a smaller rise of temperature and pulse than the children, but that one or other of these measurements was always a surprise after the first appraisal of the patient.

The paucity, or even complete absence, of other clinical signs was striking. An occasional inflamed pharynx was found, and if present was associated with neck glands, enlarged quite disproportionately early in comparison to the length of the history.

Occasionally an adventitious respiratory sound was heard low in the axilla at the end of inspiration. This may have been a rub, but was more reminiscent of the crackling noise accompanying a muscular contraction. No positive neurological signs were found in any case where looked for.

Treatment

As stated above, the cases were seen in two separate but geographically over-lapping practices. For personal reasons 30 in one practice were treated with aureomycin (125 mgm. 4-hourly for children, 250 mgm. 4-hourly for adults) for 2½ days. In the other practice 15 cases were treated with aspirin, pethidene and reassurance. The remainder were treated in other ways.

When discussing the cases together retrospectively we concluded that, taking into account the length of illness, relief obtained, side-effects, and relapse rate, treatment with aureomycin was superior to aspirin. The great majority of aureomycin cases were apparently well in 24 hours or less; none of the aspirin cases recovered in

24 hours. In the great majority of the aureomycin cases pain disappeared in 2 to 4 hours and pyrexia resolved in 4 to 8 hours. In the aspirin cases the pain, variable before treatment, became bearable but was not absent before 24 to 36 hours, and the temperature dropped by lysis. There were 2 relapses in the 30 aureomycin cases and 4 relapses in the 15 aspirin cases. One of the aureomycin cases alone caused any anxiety.

> **Case history.** A child aged 4 had an apparently exact repetition of the original symptoms 10 days after his first recovery and was treated by his mother with several doses from an unfinished bottle; when the child did not improve the doctor was sent for. On examination a rub was found, with rales, ronchi, and diminished movement and air entry in right lower chest. Subsequently there was patchy consolidation in the right base. As the child was already taking a potent antibiotic (aureomycin) this was continued, but with no response. Change to penicillin produced prompt and complete recovery.

Although this case was recorded as a relapse because of the symptomatology at onset, it now seems more likely that it was an intercurrent infection with a pathogen either naturally or recently rendered resistant to aureomycin, and might, therefore, be considered a side effect of treatment.

No other side effects were found in either series of cases.

Spread within families

In 3 families, 9 persons were affected and 7 secondary cases occurred at intervals each of 48 hours. In 2 families the secondary case in each occurred 36 hours after the primary case. In one family the secondary case occurred 72 hours after the primary. In one family of 5 persons the 4 secondary cases occurred at intervals of 24, 48, 48 and 72 hours.

Other virus diseases locally prevalent

Throughout the period of this epidemic various childhood exanthemata were occurring. A sharp epidemic of moderately severe measles started in village **A** as the Bornholm was subsiding, reached village **D** more rapidly than the Bornholm had, and was not seen elsewhere. Chickenpox started in village **SM** a few days after B-day, and a few cases appeared in village **A** 3 weeks later.

Mumps in village **E** preceded B-day, and continued throughout the whole Bornholm epidemic. Mumps occurred sporadically in villages **H** and **M**, starting before B-day and continuing throughout. Villages **E,H** and **M** suffered either no or very few mild cases of Bornholm disease.

The apparent mutual exclusion of Bornholm and mumps may be illusory, but is odd. The reasons why measles did not spread as far, or in the same manner, as Bornholm and the ease with which chickenpox crossed the area from west to east, while Bornholm failed to reciprocate, are equally odd. These features were unfortunately seen only in retrospect, and our records will not allow the clothing of this picture beyond the bare bones of fact.

Summary

1. An epidemic of Bornholm disease involving fifty persons in a rural area in Cornwall is reported.
2. The disease was more common in children (2.5: 1) and in males than in females (2.3: 1).
3. The spread through the villages is described.
4. The clinical features are briefly recorded.
5. The interval between cases in family outbreaks was from 24 to 72 hours.

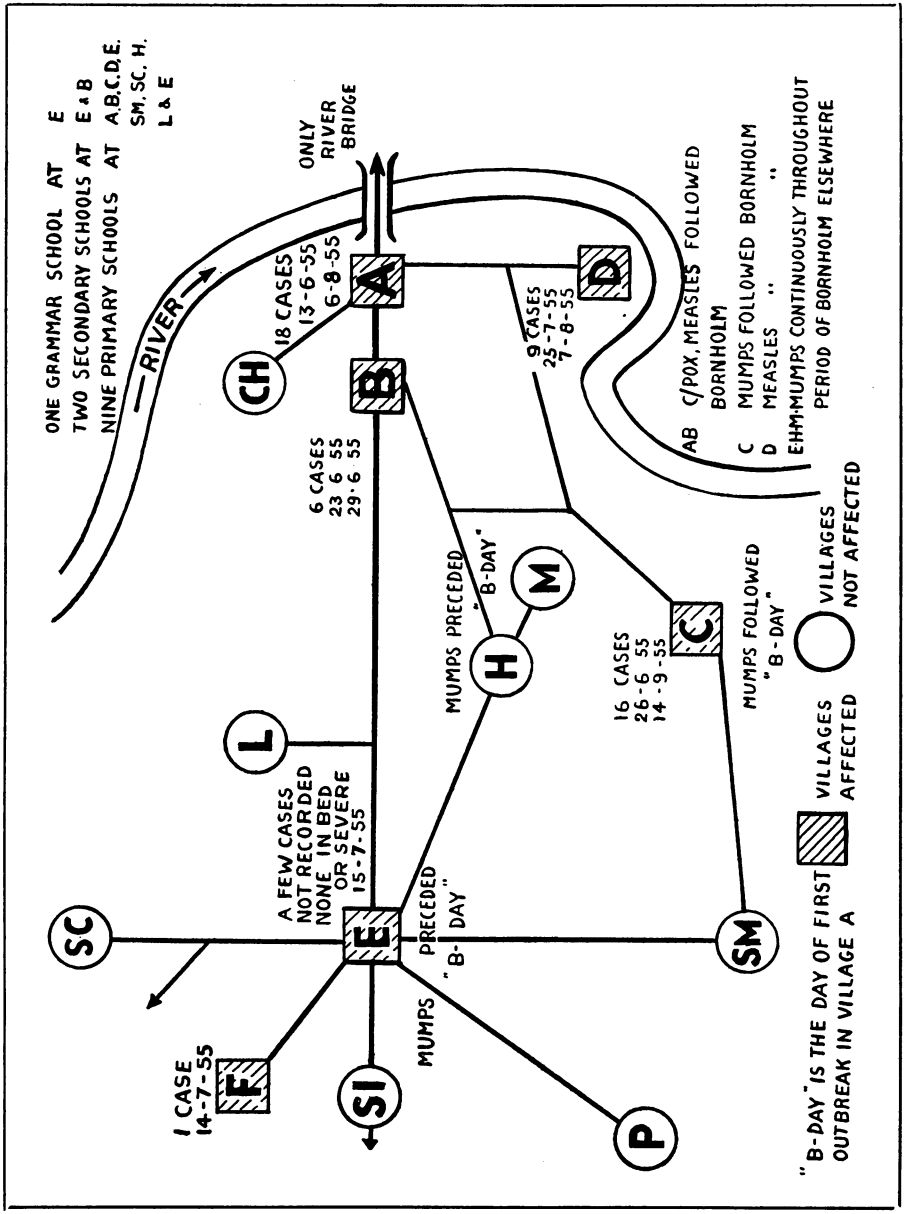

Diagram illustrating the spread of Bornholm disease through the neighbouring villages and its relationship to other virus infections.