AN EPIDEMIC OF GLANDULAR FEVER

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An outbreak of lymphadenitis with fever, presenting several features of interest, occurred at a boys' preparatory boarding school during the summer term, 1947. The school is situated in the country, and laboratory facilities are not readily available. Investigations were therefore started late and are not complete, so conclusions must be regarded as tentative.

The Outbreak

In May, 1947, one of the boys became ill with fever, a sore throat, and enlargement of the parotid and cervical glands, giving him the appearance of having mumps, a diagnosis which was at first suggested. A week later a second boy became ill with similar signs and symptoms, including enlargement of the parotid gland on both sides. It was then found that both boys had had mumps a year previously while at the same school and the diagnosis became suspect.

During the few days succeeding the onset of the second boy's illness, five more boys developed enlarged cervical glands with sore throats and fever. The parotid glands in these cases were not enlarged. Palpable glands were also found in the axillae or groins or both. In no case was the spleen enlarged. Temperatures ranged from 99° to 102° F. The boys were isolated in a dormitory and a preliminary diagnosis of glandular fever was made. Laboratory investigations were commenced at this stage, throat swabs were examined, and differential white counts and Paul Bunnell reactions were carried out.

During the next week, ten more boys were admitted with enlarged glands and a slight temperature. It was therefore decided to examine the

remainder of the boys in the school, and it was found that another twenty-one (bringing the total to thirty-eight out of eighty-one) had enlarged cervical glands, and many of them also had enlarged axillary glands, and had at some time felt a little 'off colour,' having had a slight sore throat or stiff neck, but had not felt sufficiently ill to report sick. Two of these boys had a temperature of 99° F. when examined and were taken into the sick room. Three more cases occurred at a later date.

It is interesting to note that each succeeding batch of boys was less severely affected than the preceding batch. The early and most severe cases took from eight to ten weeks to recover, as shown by loss of fever, diminishing glandular enlargements, and the return to normal of the blood count, whereas the majority of the later cases were absent from school for periods of from three to ten days, and some not at all. Blood counts were not carried out in the milder cases. The disease had completely died out by the end of July.

Clinical Picture

Glandular enlargement. In the first two cases, both parotid glands were grossly swollen, the tonsillar glands were as large as walnuts, and the glands in the posterior triangles were palpable, as were the glands in the axillae and groin. The parotid swelling subsided in about ten days, but the tonsillar and other cervical glands subsided very slowly, gradually diminishing over a period of from eight to ten weeks. In the second group the tonsillar glands were the most enlarged, but other glands were palpable in the neck and axillae. The glands in the neck were often tender and caused the

TABLE 1
DIFFERENTIAL WHITE COUNT, PAUL BUNNELL, AND THROAT SWAB RESULTS

Case	Lymphocytes %	Polymorphs %	Monocytes %	Eosinophils %	Paul Bunnell	Week of illness	Throat swabs	
							Streptococci	Vincent's organism
1	34	54	4	7	neg.	Second	+	neg.
2	31	64	3	2	neg.	Second	+	neg.
3	29	43	11	7	neg.	First	neg.	neg.
4	28	57	8	7	neg.	First	neg.	neg.
5	33	52	12	3	neg.	First	+	neg.
6	31	62	7	nil	neg.	First	neg.	neg.
7	11	64	11	9	neg.	First	neg.	neg.

TABLE 2
LATER BLOOD COUNTS ON CASES 2, 5, 6, AND 7

Case	Total white	Lymphocytes		Polymorphs		Monocytes		Eosinophils		Red count (millions per c.mm.)	Hb. %	Week of illness
		%	Total	%	Total	%	Total	%	Total			
2	21,700	6	1,302	85	18,445	3	651	6	1,302	3.7	64	4th
5	10,800	30	3,240	48	5,184	7	756	15	1,602	4.2	80	5th
6	6,400	27	1,720	36	2,304	14	896	22	1,408	3.65	66	5th
7	9,000	19	1,786	44	4,176	4	376	31	2,914	4.37	70	13th

neck to ache. In the later cases a few palpable glands with or without a slight pyrexia were all that was found on clinical examination. It was noticed that the left side of the body was more commonly involved than the right.

Temperature. In the first two cases the temperature ranged from 100° F. to 102° F. while the glandular enlargement was at its height and subsided with the parotid enlargement. In other cases the degree of pyrexia varied in relation to the size of the glands, and in cases where glands were only just palpable was normal, or only slightly raised.

Investigations

These were commenced as soon as glandular fever was suspected. In table 1 the differential white count, Paul Bunnel, and throat swab results are shown. It will be seen that there was only a slight, and in some cases no, increase in mononuclear cells; on the other hand there was a very definite eosinophilia in five out of seven cases. The Paul Bunnel titrations were within normal limits, and the throat swabs were inconclusive. It was therefore decided to repeat some of the blood counts and Paul Bunnel tests at a later date. This was done in cases where the eosinophilia was lowest, and the results are shown in table 2. The total white counts were estimated on this occasion and varied considerably; the high count in Case 2 can probably be accounted for by the streptococcal throat infection which complicated this case. The striking point was the marked eosinophilia, the total eosinophil count being about the same in each case. It can be seen that the eosinophil count increased, as the illness progressed, well into convalescence. There was also a secondary anaemia. The Paul Bunnel reactions remained negative in Cases 2, 5, and 6 and was not repeated in Case 7. In Cases 2, 5, and 6 stools were examined for worms and ova when eosinophilia was at its height, and intradermal tests were done to exclude trichiniasis. The results were negative.

Discussion

A number of interesting facts came to light during this epidemic, which was presumably one of glandular fever. Glandular fever is described in many

different forms, varying in adults and in children. In children, where epidemics are usually seen, variations are extremely common. In certain cases blood counts may even be normal (Whitby and Britten, 1942).

The most difficult task at the beginning was to make a diagnosis. The first two cases resembled mumps; the next five cases suggested glandular fever, but the laboratory findings did not confirm this, since the Paul Bunnel tests were negative, and the increase in mononuclear cells small, while that of eosinophils was comparatively great. There was no splenic enlargement (Bernstein, 1940, reports splenic enlargement in 50 per cent. of cases, as do other writers).

At first it was considered that this might be a new disease characterized by lymphadenitis with eosinophilia, possibly due to a virus or other infection, to be associated with (i) infectious mononucleosis, (ii) infectious lymphocytosis.

Further investigations, although limited, showed that:

1. The Paul Bunnel was still negative after five to six weeks from the onset in the three cases in which it was repeated. Some writers state that the Paul Bunnel test is positive in almost 100 per cent. of cases. In a series of seventy-eight, Kaufman (1944) found that 75 per cent. gave a positive reaction at varying stages. Paul (1939) and Fuller (1941) both state that a positive reaction may not develop at all. Whitby and Britten (1942) state that in their opinion there are a number of closely related viruses which give rise to the symptom complex, and whilst most of these induce serological changes associated with the Paul Bunnel test, others do not. Himsworth (1941) states that the titre may be influenced by the absolute number of monocytes. This epidemic supports his statement.

2. The eosinophilia which was present in the acute stage, and was a marked feature of this epidemic, increased as the glands slowly subsided, reaching in one case an absolute total of 2,914 and a percentage of 31. A slight eosinophilia has been described in convalescent cases of glandular fever

(Tidy, 1943) and other acute fevers, but it is felt that its appearance was abnormally early, and the ultimate figure comparatively high. No other cause for eosinophilia was discovered.

3. There was a marked secondary anaemia which responded to iron.

Summary

An epidemic of glandular fever has been described occurring in a closed community. The first two cases were severe and showed parotid involvement; the succeeding cases were less severe, and the epidemic died out in three months.

There was only a slight mononucleosis in the

first weeks of the disease, which rapidly disappeared. An eosinophilia appeared early and gradually increased for a period up to three months. There was a secondary anaemia. All Paul Bunnell titrations were negative. There was no splenic enlargement.

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