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AN OUTBREAK OF EPIDEMIC CATARRHAL JAUNDICE

BY

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A review of accounts of outbreaks of epidemic catarrhal jaundice occurring in this country shows that the majority have affected rural areas. There have been exceptions, for Morgan and Brown in 1927 described an extensive outbreak in the Midlands in which 200 persons were affected, with one fatality. A previous outbreak in Staffordshire was described by Frazer in 1935, although Barber (1937) regarded this epidemic as one of infective hepatic jaundice. It would appear that the town-dweller has relative immunity from this disease. The following account of an outbreak of epidemic catarrhal jaundice occurring in an urban area may therefore be of some interest; it is published in the hope that other writers may suggest further aetiological factors and effective measures of control.

Incidence

A total of 64 cases occurred in an outbreak which has lasted for eight months. This figure is estimated to represent about 80% of the total number of cases. The outbreak was chiefly among school-children, and the few adults affected were mainly young school-teachers. The epidemic appeared to be confined to one school for several months, but after a summer holiday, during which only a limited number of children attended school, the disease made its appearance at several other schools. Practically all of these schools were in the northern part of the borough.

The seasonal incidence of the disease is usually in autumn and winter, but this epidemic began in the spring and continued over the summer. The sex incidence was about equal. The highest age incidence occurred between 6 and 10 and between 20 and 30 years. It was noted that in no case were more than two members of a family affected. School-teachers were particularly at risk to the disease.

Age	Males	Females
4-5 years inc.	5	3
6-10 " " " " " "	20	22
11-15 " " " " " "	3	3
20-30 " " " " " "	Nil	5 (4 school-teachers)
Over 30 " " " " " "	1	2 (1 school-teacher)
Total	29	35

Aetiology

The evidence points to a contact at school. The epidemic had not the explosive nature usually associated with outbreaks

of food-poisoning due to contaminated food, milk, or water. Further, the water supplies of the borough are chlorinated, and school milk supplies are bacteriologically clean. Again, the infant and junior departments in the school mainly affected received milk supplies from different sources. The disease appeared to pick out the children in twos and threes from each class, and the available evidence pointed to a close personal contact, with droplet infection as the probable means of spread. No bacteriological examinations were carried out, but reports of previous epidemics show that they are negative and that the probable cause of the disease is a filterable and ultramicroscopic virus. There was no particular incidence of sore throats or enteritis. While an epidemic of enteritis occurred in some of the schools of the borough, this was seasonal, and, further, there was no especial incidence of cases of catarrhal jaundice at any of them.

Clinical History

From descriptions given by various medical practitioners, and from visits made to many of the cases, the following clinical report has been compiled.

The spread of the disease suggests that the incubation period varies between three and four weeks. In the prodromal period malaise and anorexia may be present, but more often the disease started with vomiting, sometimes associated with severe upper abdominal pain. The attack of vomiting lasted from a few days up to a week, and resembled cyclical vomiting. Constipation was usual, though a few cases had diarrhoea until the onset of jaundice. In some cases jaundice limited to an icteric tinge of the conjunctiva, and nausea, were the only symptoms, and the illness cleared up in less than a week. With the cessation of vomiting, jaundice appeared first of all in the conjunctiva, and in the course of a day or two spread to the skin of the face, trunk, arms, and lower limbs. The colour deepened to a canary yellow, and the motions became clay-coloured and the urine orange-coloured. Pyrexia was variable in occurrence and in severity. Headache was sometimes severe. There was well-marked enlargement of the liver, with tenderness over the gall-bladder. The spleen was enlarged. The jaundice lasted a variable period from a few days up to two weeks, and gradually disappeared in the reverse order. The faeces and urine became normal a few days before the jaundice disappeared from the skin.

Examination of blood films from five of the cases in the acute stage showed a well-marked leucopenia with a relative lymphocytosis. An increase in monocytes was noted in each film. In the acute stage in adults there was sometimes complaint of severe pains in back, arms, and legs. No epistaxis or petechial rashes occurred. Despite the severe jaundice, itching of the skin was present in very few cases. Convalescence was marked by the development of excessive appetite. In a few instances some degree of furunculosis occurred.

Vomiting in the acute stage is usually a feature; Lisney (1937) attributes this to duodenitis. According to Pickles (1930), the severity of the upper abdominal pain may suggest a perforation.

Differential Diagnosis

The diseases to be excluded are Weil's disease, infective hepatic jaundice, simple catarrhal jaundice, enteric fevers, and acute yellow atrophy. Weil's disease is marked by epistaxis and petechial rashes, with high fever, severe nervous disturbance, blood leucocytosis, and the identification of leptospira in the blood. Infective hepatic jaundice is characterized by an absence of pre-icteric symptoms, and the jaundice is less marked. Simple catarrhal jaundice occurs sporadically. The symptoms are very similar to those of epidemic catarrhal jaundice, and this complaint may be an interepidemic type. Jaundice seldom occurs in the enteric group, while acute yellow atrophy is a very rare disease.

Spread of the Disease

The spread of the outbreak is well illustrated by the experience of the junior department of one of the schools.

- Class: Boys aged 7
 C. H.—Away Sept. 24
 M. R.—" Oct. 21
 Class: Boys aged 10
 A. H.—Away May 19
 T. W.—" June 18
 Class: Girls aged 9
 B. F.—Away July 27
 J. M.—" Sept. 4
 M. G.—Oct. 3 (3 days' jaundice; not excluded from school)
 Miss S. (teacher of the class)—Away Oct. 10
 B. T. (daughter of Miss S.'s landlady)—Away Oct. 29
 No cases were reported from B. T.'s school at this time.

The evidence suggests a spread of the disease from child to child and from child to school-teacher, and that very close personal contact was necessary.

It was interesting to note that no member of a class of nursery children, in the charge of a school-teacher suffering from the disease, contracted the illness. It was observed that the incidence in children under school age was low.

Clear cases of infection of two school-teachers who were friends occurred at one school, with an interval of three weeks between the illnesses. No children in their respective classes were affected, although the disease was prevalent in the school. It seems that the infective period is a short one, and Pickles (1939) states that further evidence of this is noted in the periodicity of attacks. A two-weeks isolation period was not followed by any return case.

Conclusions

It appears that epidemic catarrhal jaundice spreads chiefly in school-children, but young school-teachers frequently contract the disease.

There is probably among the general public a lack of appreciation that cases of jaundice occurring in children may be infective.

This disease seems to have a short infective period, to be spread by close personal contact, and to have an incubation period of between three and four weeks.

It is spread through an ultramicroscopic virus, notably by way of the upper respiratory tract. No effective measure of control appears available. School closure leads to scattering of the disease over a wider area.

A period of two weeks' isolation seems to be sufficient. This was carried out in the present outbreak, and there were no return cases.

The town-dweller appears to have little immunity from the disease, which spreads in the same manner as in rural areas. Two age groups are chiefly affected—6 to 10 years and 20 to 30 years. It is possible that the former group is affected because children of this age may be more sociable in their habits.

An epidemic of enteritis may occur coincidentally with an epidemic of catarrhal jaundice if either occurs out of season.

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PEDICULOSIS CAPITIS AND INTELLIGENCE IN W.A.A.F. RECRUITS

BY

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Recently much interest has been aroused in the question of the correlation of parasitic infestation, particularly scabies, with intelligence. The results so far have been controversial. Hodgson (1941a, 1941b) found that the incidence was higher in men of inferior intelligence, whereas Mellanby *et al.* (1942), attempting to corroborate Hodgson's work, found that men suffering from scabies were mentally an approximately normal sample from the Army.

The Investigation

The opportunity for the present investigation occurred during psychiatric work at a large W.A.A.F. depot when selecting recruits suitable for trade training, those suitable for acceptance in the Service but not for trade training, and those unlikely to become efficient airwomen. Broadly speaking, the problem

resolves itself in the main into one of intellectual grading, although obviously other factors, such as personality, temperament, previous work, and social history, enter too. The correlation between parasitic infestation and intelligence therefore has a practical aspect: thus in cases in which doubt occurs, opinion may be, and in fact has been, swayed by the incidence of scabies, pediculosis, or, as sometimes happens, both.

In the W.A.A.F. pediculosis capitis is by far the greatest of all parasitic problems, and because of the relatively large numbers infested the correlation of intelligence and infestation was attempted. All W.A.A.F. recruits on arrival at the depot are examined for pediculosis capitis by specially trained medical orderlies as part of the routine F.F.I. examination. Those found to be infested are detained in "head huts" for treatment, and their intelligence tests, psychiatric examination if necessary, and trade selection are postponed till such treatment is completed.

The intelligence test used on all W.A.A.F. recruits is the "G.V.K." test, devised by Dr. W. Stephenson of Oxford. This consists of three group paper and pencil tests applied by specially trained W.A.A.F. officers and airwomen under standard conditions. They are divided in accordance with the Spearman approach to intelligence into "G" tests (general analytical intelligence), "V" (verbal intelligence), and "K" (practical-mindedness). The raw score on these tests is converted into percentiles expressing in percentage terms the standing of a recruit in relation to other recruits.

Results

The G.V.K. scores expressed in percentiles of 312 recruits after treatment for pediculosis capitis are given in Table I. The percentile G.V.K. scores of 312 unselected recruits found to be free from pediculosis capitis are given in Table II.

TABLE I.—G.V.K. Scores in Percentiles: Recruits Treated for Pediculosis Capitis

Percentiles	Number of Recruits		
	G	V	K
90-99	7	6	0
80-90	15	22	0
70-80	26	14	2
60-70	21	15	3
50-60	31	19	8
40-50	28	22	9
30-40	42	31	32
20-30	44	34	47
10-20	41	64	57
0-10	57	85	154
Total	312	312	312

TABLE II.—G.V.K. Scores in Percentiles: Unselected Recruits free from Pediculosis Capitis

Percentiles	Number of Recruits		
	G	V	K
90-99	70	53	7
80-90	65	65	17
70-80	44	42	12
60-70	23	19	24
50-60	24	21	33
40-50	25	20	39
30-40	23	27	44
20-30	25	19	51
10-20	8	27	44
0-10	5	19	41
Total	312	312	312

A comparison of the two tables shows very clearly that the number of recruits with the lowest percentile scores is greater in all three tests in those treated for pediculosis capitis. Thus, in G, V, and K there were respectively 212 (69%), 236 (76%), and 299 (96%) with percentile scores of between 0 and 50 in recruits treated for pediculosis capitis, as compared with 86 (28%), 112 (36%), and 219 (71%) in those found on initial F.F.I. examination to be uninfested.

Summary

On initial F.F.I. examination 312 W.A.A.F. recruits found to be infested with pediculosis capitis were treated and then given the Stephenson G.V.K. intelligence tests. The scores after