OBESITY AFTER CHOREA

BY

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The occurrence of obesity after various infectious diseases, such as typhoid fever, for example, has been noted by many observers¹. In most instances this is attributed to lack of exercise, dietetic changes, or endocrine disorders consecutive to the acute disease and the convalescent period. When, however, obesity begins to develop abruptly after an acute disease involving the central nervous system, the question arises whether it is caused by inflammatory changes in the region of the pituitary body and adjacent parts of the brain. In connexion with chorea the occurrence of obesity has therefore the special interest that it may possibly give some indication of the extent of lesions in the brain in that condition. Two children recently attending the out-patient department at the Hospital for Sick Children, Great Ormond Street, exhibited extreme degrees of adiposity which dated from an attack of chorea, and this led to a search of the records for further cases and a survey of the scanty literature on the subject.

Clinical records.

Case 1.—Girl, aged 8 years, 4 months. This patient had her first attack of chorea at the end of 1930 and shortly afterwards began to get fat. Her father and mother are not abnormally fat and there are two other children in the family, both of normal build. When she came under observation this patient weighed 87½ lb. the normal weight for her age being 54½ lb. In all other ways she was a normal child, the heart being unaffected. The excessive adipose tissue was distributed in the usual feminine sites. There was no mental retardation and she was quite active. X-ray examination of the pituitary fossa showed no abnormality as regards size or shape. A sugar tolerance examination showed a slight delay in return to normal levels of the blood sugar, but such a small degree of diminished sugar tolerance is probably of no significance. The figures were as follows:—

Blood sugar, fasting	...	...	119 mgrm. per 100 c.cm.
" " after ½ hour	...	160	" " " "
" " " 1 "	...	128	" " " "
" " " 1½ hours	...	110	" " " "
" " " 2 "	...	84	" " " "
" " " 3 "	...	105	" " " "

Thirty-five grm. of dextrose were given. No glycosuria occurred during the test.

Case 2.—Girl, aged 10 years, 8 months. This child was admitted to hospital in October, 1930, with her third attack of acute chorea in two years, and was then transferred to a special rheumatism convalescent home. On discharge at the age of 10 years in November, 1931, she weighed 65½ lb., the normal for age being 64 lb. Examined at that time she presented the appearance of a normal child, the heart

being unaffected. She returned to an ordinary school and led an ordinary life. During the next few months she began to put on weight at a great rate. By July, 1932, she weighed 89 lb. a gain of nearly 24 lb. in eight months. X-ray examination of the pituitary fossa showed no abnormality and a sugar tolerance examination was normal. The figures were:—

Blood sugar, fasting	...	...	119 mgrm. per 100 c.cm.
„ „ after $\frac{1}{2}$ hour	...	160	„ „ „ „
„ „ „ 1 „	...	128	„ „ „ „
„ „ „ $1\frac{1}{2}$ hours	...	110	„ „ „ „
„ „ „ 2 „	...	84	„ „ „ „
„ „ „ 3 „	...	105	„ „ „ „

Thirty-five grm. of dextrose were given. No glycosuria occurred during the test.

Discussion.

These two patients received nothing out of the ordinary in the way of treatment, which was the same as regards rest and convalescence as other cases attending the hospital. To serve as a comparison all children who had had chorea, attending the same out-patient clinic, were investigated as regards their weight before and after the acute illness. There were 20 such children in all, and every one had suffered from chorea, with or without cardiac involvement, during the past few years. Of the 20 children, 7 have remained within 10 per cent. of the normal weight for age, 7 are 10 per cent. or more below, and 6 are 10 per cent. or more above the normal weight for age. Of the total 20 cases 6 are boys and 14 are girls, while of the 6 over-weight cases 5 are girls and 1 is a boy. Analyzing these 6 cases in more detail it is found that the boy and 3 girls were definitely over-weight before the attack of chorea, and the remaining 2 girls were normal in weight before the attack. These are the 2 patients who form the subject of these comments. The other 4 over-weight children are none of them abnormally fat, and the increase since chorea has not been excessive.

It seems fair to attribute to the chorea some part of the ætiology of the adiposity in such cases. Dunlop and Murray Lyon² in a recent study of obesity mention its occurrence after rheumatic endocarditis and attribute it to lack of exercise. But it is significant that, especially in Case 2, the adiposity did not develop during prolonged rest in a convalescent home, but only when, the disease process being over, the child returned to ordinary life. Neither of the girls is near enough to puberty to explain the increase in weight by the well-recognized tendency to adiposity occurring at this period of development.

Previous records.—Published cases of this condition are scarce in number. The most important contribution to the subject is by Coburn³ who mentions obesity following chorea in seven instances out of his great study of 3,000 rheumatic subjects. He defines the condition as one in which a child previously of normal proportions becomes obese shortly after the characteristic manifestations of Sydenham's chorea have subsided. One

patient described by Coburn went from a normal of 88 lb. to 166 lb. during the few months after recovery from chorea. He states that 'this striking development of adiposity is perhaps an objective indication of cerebral changes, possibly in the region of the hypophysis.' Another important paper is by Gamna⁴ who describes a case of the 'syndroma adiposo-genital' following rheumatic chorea. This was in a boy of 12 who had excessive adipose tissue distributed in the feminine situations. The pituitary fossa was normal. Gamna suggests a lesion in the region of the tuber cinereum or hypothalamus.

Adiposity has been described after other acute affections of the central nervous system, and this has also some bearing on the type and site of the lesion in chorea. After epidemic (lethargic) encephalitis the development of adiposity is well recognized. Hall⁵ in his work on this disease describes a large literature on the subject, and von Economo⁶ also refers to 'traces of dystrophia adiposo-genitalis' in children following encephalitis lethargica. Raab⁷ has described an interesting example of abnormal adiposity following post-vaccinal encephalitis and Babbonneix, Robin and Lebourdy⁸ showed before a medical society in Paris a girl of 15 with obesity, amenorrhœa, alopecia and choreiform movements which were all attributed, on slight evidence, to congenital syphilis. A valuable paper on obesity in childhood by Nobécourt⁹ contains reference to a group of 'obésités d'origine encephalique,' and he attributes these to lesions in the floor of the third ventricle in the region of the tuber cinereum. He states that such obesity may occur after cerebral tumour, hydrocephalus, encephalopathy, epidemic encephalitis and perhaps following polioencephalitis, chronic meningitis and cerebral trauma.

Prognosis and treatment.—It is not possible from the existing literature to come to any definite conclusions about prognosis, and the two cases here described will be carefully observed on this point. As regards treatment this is being carried out on general principles. The children are being given a diet with limited carbohydrates and fats, and exercise is encouraged. Both are receiving small doses of thyroid gland which is being gradually increased, and one is having as well whole-gland pituitary.

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