ART. II.

Statistical Analysis of Cases of Chorea. By THOMAS B. PEACOCK, M.D., F.R.C.P., Physician to St. Thomas's Hospital, and to the Hospital for Diseases of the Chest, Victoria Park.

THE cases of which the following paper contains the statistical analysis, were treated by myself within the last few years, and, with the exception of three or four seen in private practice, all but one occurred at St. Thomas's Hospital.

Distribution of Cases as to Age and Sex.

Ages.	Total.	Males.	Females.
5 years	1	1	0
5 to 10 „	13	6	7
10 to 20 „	14	4	10
20 to 30 „	1	0	1
30 to 40 „	0	0	0
40 to 50 „	1	0	1
57 „	1	0	1
	<hr/> 31	<hr/> 11	<hr/> 20
Mean age	14·6	10·7	16·8

Predisposing Causes.

Occurred during rheumatic fever, with cardiac complication .	1
Supervened a fortnight after recovery from what was regarded as diaphragmatic pleurisy, but which may have been some cardiac affection, though unconnected with any obvious physical signs	1
Supervened six months after attack of rheumatic fever, not obviously attended by any cardiac complication	1
Supervened shortly after an attack of rheumatic fever, and attended by a systolic murmur heard at the base	1
Stated to have been preceded by pains in the shoulder and thigh, but so slight as not to receive medical attention .	1
Accompanied by a systolic murmur at the base, but no statement as to previous attack of rheumatic fever	1
Supervened shortly after an attack of erysipelas of the face .	1
Followed, after an interval of a year and a half, an illness said to have been inflammation of the kidneys	1
Out of health three months before, but labouring under any definite illness	1
Connected with retention of the catamenia	1
Connected with irregularity and defect of catamenia	1
In the sixth month of pregnancy, in a person who had had chorea in early life	1
No predisposing cause ascertained	19

Period at which the previous Attacks had occurred in cases where there were two or more.

In early life, the patient being twenty-two years of age . . .	1
Five years before, the patient being nineteen years . . .	1
Two years before	1
One year and a half before (the patient having had three attacks during that period)	1
One year before (the patient having had five attacks in that period)	1
One year before (the patient having had only one attack) . .	1
Three months before (but two previous attacks at thirteen and fifteen years of age, the patient being seventeen) . . .	1
Very short time previously (subsequently a third slight attack)	1
Five previous attacks, but period not named	1
	<hr/> 9

Result.

Cured, 25 ; relieved, 2 ; died, 2 ; total, 31.

Residence in Hospital.

Duration of residence in 27 cases (26 cured and 1 relieved).—Mean period 52·7 days, and extremes 15 and 153 days; or, exclusive of the case only relieved, 48·7 days, and extremes, 15 and 134 days.

2 to 3 weeks	4
3 to 4 "	3
4 to 5 "	1
5 to 6 "	4
6 to 7 "	5
7 to 8 "	1
8 to 9 "	3
9 to 10 "	1
11 to 12 "	2
17 to 18 "	1
19 to 20 "	1
21 to 22 "	1 relieved.

27

In two cases the date of discharge is not reported.

Duration of Residence as to whether first or subsequent attacks.

Duration of treatment in 19 out of 22 cases of first attack, 52·5 days, and extreme periods 15 and 153 days; or deducting the case in which relief only was obtained, 46·9, and extremes, 15 and 134 days.

Duration in 8 out of 9 cases of relapse or subsequent attack, mean 52·8, extremes 21 and 122.

Duration of Residence as to Age.

In 17 cases (including three of relapses or subsequent attacks), from five to fourteen years of age inclusive, mean age 10·1 years, and mean period of treatment 48·1 days, extremes 15 and 134.

In 8 cases (including 3 of relapses or subsequent attacks), from fifteen to twenty-two years of age inclusive, the period of treatment was 49·8 days, mean age 19·2, extremes 20 and 68.

In 2 cases, forty-eight and fifty-seven years of age, the first having shortly before had a previous attack and again relapsed after this; in the other, in which the attack was a first one and was never entirely cured, rather lapsing into paralysis agitans, the duration of the treatment was 57 and 153 days.

Treatment.

The treatment consisted in the employment of aperients with the view of relieving any disorder of the digestive organs which may have existed, and the repetition of such as often as required throughout the continuance of the affection; the exhibition of nervine tonics, anodynes, and occasionally counter-irritants, to remove the spasmodic action; and at a later period, the use of the tepid or cold shower- or sponge-bath with a nutritious diet and frequently wine or malt liquor.

The nervine tonics employed were sulphate of zinc, given in doses at first of one or two grains, in infusion of valerian, and gradually increased by one or two grains at a time, generally twice a week, and repeated three times daily; the remedy being suspended if sickness was produced; or when the symptoms subsided. The doses required for the cure in cases where zinc only was employed were four, six, eight, nine, eighteen, and twenty grains.

Iron was chiefly given in the form of the saccharine carbonate, in doses of five, ten, fifteen, twenty, and thirty grains, three times daily; occasionally the sesquioxide was employed, and rarely the sulphate of quinine and iron with an excess of sulphuric acid; or the citrate of quinine and iron.

Arsenic was given, in the form of the liquor potassæ arsenitis, in doses gradually increased from three or four to eight minims, three times daily.

The anodynes employed were morphia or hyoscyamus exhibited at bedtime or more frequently during the day.

Blisters were occasionally applied either at the back of the neck or down the spine.

Tepid or cold sponging and the shower-bath were also frequently had recourse to.

The results of the treatment by these different remedies were as follows:

The affection was cured by the employment of zinc alone in 7 cases, including three cases of relapse or subsequent attacks.

The mean age of the patients so treated was 12·1 years, and the extreme ages 8 and 22.

The period of time occupied in the cure averaged 35·5 days, and ranged from 21 to 63 days.

The cure was effected by iron alone in 6 cases, 1 being a case of relapse or subsequent attack.

The mean age of the patients was 10·4 years, and the extreme ages 10 and 13.

The period of treatment (the date of discharge in one case not being reported) was 28.6 days, and the extreme periods 20 and 46 days.

Zinc failed, but iron effected the cure in 6 cases, the mean age of the patients being 13.3, and the extremes of age 5 and 19.

The average period of treatment was 53.6 days, and the extreme periods 38 and 84 days.

Iron failed and zinc proved successful in 2 cases, the ages of the patients being 13 and 19, and the periods of treatment 122 and 68 days; both were cases of relapse or subsequent seizure.

Zinc and iron both failed, and the cure was effected by arsenic, in 1 case; the age of the patient was 9, and the duration of treatment was 78 days.

Zinc and arsenic failed in 1 case; but the patient was cured by iron and morphia, the latter exhibited first every night, in doses from one-sixth to one-third of a grain, and subsequently every night and morning. The patient was 14 years of age, and the duration of the treatment extended to 134 days.

Iron and arsenic were both used with little benefit in 1 case; but the patient recovered considerably under the use of zinc. The symptoms, however, never entirely subsided, but lapsed into an affection of the face and head, somewhat resembling paralysis agitans. The age of the patient was 57, and the duration of treatment 153 days.

Arsenic aggravated the symptoms, and zinc effected a cure in 1 case, the patient being 10 years old, and the treatment extended to 37 days.

Quinine and iron were successfully used in 2 slight cases of relapse, ages 48 and 12, and periods of treatment 57 and 41 days.

Of the two fatal cases, one terminated on the 6th day from admission, the 26th from commencement of treatment, and about the 34th from seizure; the other on the 15th from admission and 30th from seizure. Both the patients were 11 years of age; one was a boy, the other a girl. One patient took zinc, iron, arsenic, and morphia; had blisters, &c., applied: the treatment of the other case consisted in the employment of the sesquioxide of iron and sulphate of zinc, opiates, and the application of blisters.

CONCLUSIONS.

The general conclusions deducible from this small number of cases correspond with those which have been arrived at by observations on much larger series:

1st. The disease is shown to be much more common in females than in males, the proportion being 20 females to 11 males.

2nd. It occurs at all ages, but much the most frequently in early life or youth and girlhood, or from 5 to 20 years of age. The cases at this period of life constituted 27 out of the 31 analysed.

3rd. The affection appears to be about equally frequent in young boys and in young girls, the number of cases at from 5 to 10 years of age being in boys 6, in girls 7.

4th. At a later period, or in youth and girlhood, or from 10 to 20 years of age, there is a great difference in the frequency of the

disease in the two sexes, the cases in males being only 4, and in females 10. After this period also the female sex seems to be very much more exposed to the disease than males; these facts pointing to catamenial irregularities, or other uterine disorders, as being influential in predisposing to the disease.

5th. By far the most frequent co-existence with chorea is, however, some form of rheumatic or cardiac affection. In 3 cases, the chorea supervened during or after attacks of rheumatic fever, and in a fourth the affection commenced with slight rheumatic symptoms. In one of the former cases there was obvious cardiac complication, and in a fifth, there were signs of cardiac disease, but without any history of rheumatism. In 9 other cases it is stated that the patients and their friends had no knowledge of their ever having had rheumatism. It would thus appear that, in 14 cases, rheumatic or cardiac symptoms had existed in 5. It is, however, probable that this proportion is too large, as almost certainly full inquiry was made in reference to all the other cases, but failed to elicit any information. The co-existence or near connexion of rheumatic and choreic attacks has, however, been so frequently observed as to have completely established the existence of some relation between the two affections, probably as coincident effects of a common cause.

In two other cases, not included in the report, in which the symptoms were mainly cardiac, there had been, or existed, symptoms of chorea. In one of these, a girl 9 years of age, the patient died of regurgitation through the mitral orifice from dilatation of the aperture without valvular disease, and the heart was very large—ten ounces and a half—double the natural size; the pericardium was adherent in places, and the endocardium thickened. The patient had had chorea three years before her death, and suffered first from cardiac symptoms after an attack of influenza about two years after. In the other case, a boy of 14, there were chorea, spasms, and paralysis of the left hand and arm, with rheumatic pains in different parts of the body, and cardiac symptoms, which had supervened three months before. The symptoms were apparently brought on by mental excitement. After death, the heart was found generally enlarged; there was some effusion in the pericardium, and vegetations on the aortic and mitral valves. The patient had never been quite well since a severe attack of scarlet fever seven years before.

6th. The most frequent exciting causes of chorea are more or less violent mental impressions—fear, grief, excessive joy, &c. Of the 31 cases analysed, 11 originated in some impression on the mind, and in the 12th, though the patient had had a slight fall, fear was probably the cause of the attack. It thus appears that mental causes operated in exciting the disease in 38·7 per cent. of the cases, and it is probable that the common origin of the disease in mental impressions explains in part its greater frequency in females. For such causes, however, to give rise to the symptoms, it is doubtless necessary that the individual should be unduly susceptible, for in several cases the assigned impressions were of too trifling a nature to have operated injuriously upon a

healthy person. In 18 cases also, or 58·06 per cent., it may be inferred that no exciting cause could be detected.

7th. The indications for treatment are to relieve gastro-intestinal irritation, quiet the nervous system, and improve the general power and the condition of the blood. The remedies which were employed for these purposes have already been mentioned. In the selection of the kind of nervine tonic to be exhibited in any given case, I have generally been guided by the existence or absence of evidences of chlorosis. When the patient is very anæmic, as indicated by the colour of the skin and mucous membranes, the presence of continued venous murmur in the neck, &c., I have usually, after the employment of aperients, had recourse to chalybeate medicines; when, on the contrary, the patient was free from such symptoms, the zinc has generally been first employed:—the other remedies—arsenic, opium, &c.—only being had recourse to when the iron or zinc had failed. Under all forms of nervine tonic, the patients occasionally fail to derive benefit, but, as a general remark, zinc seems to prove more rapidly useful and to afford more permanent relief than iron. The remedies act with greater efficiency, according to the rapidity with which the doses are increased and the full extent of the increase. Thus I have generally increased the doses twice or three times in the week, adding in the case of the zinc at first one grain, and subsequently two or more each time. Though in the cases of chorea no patient took more than twenty grains of the sulphate of zinc for a dose, I have in other affections given thirty grains three times daily, and without producing sickness or any evidence of gastro-intestinal irritation.

When any given remedy has been fairly tried without marked amendment, or when the improvement at first noticed has not been continuous, it is better to substitute some other medicine, and the improvement which follows the employment of the new remedy is often very marked; and I have sometimes noticed this when a second or a third change has been made.

A good indication of the advantages of treatment may be derived from the condition of the pupils; generally in the active stage of chorea they are very large and nearly insensible to light, and as the patients recover, the pupils diminish in size and resume their proper motion. The shower-bath is often very beneficial, but in children it is apt to create alarm and to aggravate the symptoms. When this has been the case, I have preferred to employ ablution, and have used cold or tepid water, according to the state of the weather and the feelings of the patient.

8th. It does not appear that there is much difference in the facility of cure in cases of first attack, or of relapses or subsequent seizures. The age, also, does not influence the result, provided the patients be not in advanced life. In the only two cases at middle age and advanced age the attacks were, however, very prolonged, and in the elderly person the cure was only partial.

9th. Under any course of treatment chorea is very apt to relapse; and even after recovery is complete, attacks for a second or third time or

even oftener, frequently occur. It will be seen that in 9 out of the 31 cases, or in 29·03 per cent., the patients had had previous attacks. I am disposed to believe, without, however, being able to bring conclusive proof on the point, that relapses occur less frequently in the cases which are treated by zinc than in those in which iron has been used; I have therefore not unfrequently given zinc to patients after the active symptoms have been relieved by the use of iron, and apparently with benefit in preventing relapse.

Fatal Case of Chorea.—John Adkins, aged 11, admitted into the Royal Free Hospital, August 2, 1849.—The symptoms were first observed about a month before; he was observed to twitch the hands and arms, and the spasms increased, so that he was brought to me as out-patient on the 12th of July. He was directed to have a calomel and rhubarb purge, and to take ten grains of the sesquioxide of iron three times daily. When admitted into the hospital he had constant spasms of the muscles of the face, arms, and legs; he had difficulty in protruding his tongue, and could not retain it for even a very short time; he could not walk, and tossed himself about on the bed in every direction, and he had a peculiar vacant stare. He was directed to have a purgative, and take ten grains of sulphate of zinc three times daily. Anodynes were prescribed, but did not procure rest or sleep; and he was blistered at the back of the neck and down the spine. The convulsions became more constant and general, his intelligence declined, and he died comatose on the 8th—the sixth day from admission into the hospital, the twenty-sixth from the commencement of the treatment, and about five weeks from the first occurrence of the symptoms. On examination after death, the arachnoid membrane on the surface of the hemispheres was found opaque, and a copious effusion of serum existed beneath it. Much fluid was also effused in the ventricles and existed at the base. The spinal cord was not examined. The cerebrum weighed 50 ozs., the cerebellum 5 ozs. and 4 drs., the pons variolii and medulla oblongata 1 oz., making the whole encephalon 56 ozs. and 4 drs. avoirdupois. The pericardium and heart were healthy, except that two of the folds of the aortic valves were somewhat united at the angle of attachment, and a loose band existed at the margin of one of them. This condition, however, was evidently a congenital defect. The heart weighed four ounces.

ART. III.

Contributions to Therapeutical Statistics. By THOMAS K. CHAMBERS, M.D., Hon. Phys. to H.R.H. the Prince of Wales, to St. Mary's and the Lock Hospitals, &c.

CONTINUED FEVER.

SINCE the opening of St. Mary's, in June, 1851, to August 12th, 1863, there have been registered, as under my care, 230 cases of continued fever. Of these cases, 109 have been treated on what may be termed