have concerned patients of normal intelligence, all our patients were mentally defective. We suggest that in the genetically determined cases of mental defect, developmental abnormalities of and, in the environmentally determined cases, damage to the basal ganglia, insufficient in itself to produce signs of Parkinsonism, may considerably lower the threshold dosage of dartalan that can cause these signs to appear.

As we have stated, none of these patients had previously shown any signs of Parkinsonism, nor were any of them known to have suffered from encephalitis. It is well known, however, that a clear history of encephalitis in patients developing post-encephalitic Parkinsonism is frequently absent, and it seems probable that it would be absent in our cases if, as we suggest, the resulting damage was insufficient to produce post-encephalitic Parkinsonism of its own accord.

Summary

An account is given of the development of signs of Parkinsonism in 15 of 31 male and female mentally defective patients who were under treatment with dartalan, a phenothiazine derivative, in an attempt to control their behaviour disorders.

Attention is drawn to the occurrence of oculogyric crises in a pair of identical twins.

A possible explanation is suggested for the very much higher incidence of this complication of treatment with dartalan in this series than in any previously reported.

We thank Messrs. G. D. Searle & Co. for providing a free initial supply of dartalan and for their helpful advice on all occasions. We are grateful to Professor Golla and Dr. W. Grey Walter, of the Burden Neurological Institute, for their help with the E.E.G.s and to the nursing staff of the Stoke Park Hospital Group for the close observation of patients which made the early recognition of signs possible.

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INCIDENCE OF INTUSSUSCEPTION IN NEWCASTLE CHILDREN

BY

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There are only two published estimates of the incidence of acute intussusception in this country. The first (Spence and Court, 1950) gave an estimated incidence of 3.8 per 1,000 live births in Newcastle upon Tyne in the years 1944 to 1949. The second (MacMahon, 1955) estimated that Birmingham children between 1945 and 1954 had an attack rate of only 1.49 per 1,000 live births. Both studies found evidence of variations in the attack rate from year to year.

It is a common impression that intussusception occurs more often in the North of England than in the Midlands and the South, and that it is more frequent in this country than in North America. The aetiology of intussusception is still unknown, but a difference of

incidence as great as that described above is important enough for this impression to be tested and if possible brought to proof. For this reason it seemed worth while measuring the incidence in Newcastle again to see whether the previous high incidence, compared with Birmingham, was the result of two or three exceptional years or a persistent feature of the local scene.

Method

The method is identical with that used on other occasions (Davison, 1946; Spence and Court, 1950)—the enumeration of all children admitted to all Newcastle hospitals and giving a Newcastle address. The years chosen were 1950 to 1957. Reasons have been given in the papers referred to above why this can be regarded as a quantitative ascertainment for Newcastle. Only cases confirmed by operation (the majority) or by barium enema have been included, and suspected intussusceptions undergoing spontaneous reduction were not counted. When intussusception recurred, only the first illness was included.

This method of enumeration has the further advantage of being formally equivalent to MacMahon's. Like us, he counted all cases with a Birmingham address treated in any Birmingham hospital, included only cases where the diagnosis was confirmed, and excluded "instances of supposed spontaneous reduction without laparotomy."

Findings

In the eight years 1950 to 1957 there were 168 affected children and a steady rate of admission, none of the annual totals departing markedly from the yearly average of 21 (see Table). In the years 1950 to 1957 there were 39,100 live births to Newcastle residents. This may be taken as a sufficiently accurate denominator and gives an incidence of 4.3 per 1,000 live births.

Intussusception in Newcastle Children Between 1950 and 1957

	1950	1951	1952	1953	1954	1955	1956	1957	Total
Children affected	23	20	22	21	22	26	17	17	168

This figure confirms the previous findings in Newcastle and strengthens it, as the estimated incidence between 1944 and 1957—more than 4 per 1,000 live births—is based upon 295 cases (168 presented now, and 127 by Spence and Court, 1950). The estimate in Birmingham, 1.49 per 1,000 live births, was based upon 296 cases (MacMahon, 1955). With these figures there can be no doubt that the incidence in Newcastle is more than twice as high as that reported in Birmingham. This difference is the more remarkable because of the general similarity of the two cities in the occupations of the inhabitants, in the density of population, and in climatic conditions. Both the Newcastle and Birmingham studies depend, however, upon the supposition that not many children with intussusception and belonging to the two cities received treatment outside. Since the north-western border of Birmingham is an arbitrary rather than a natural boundary and merges with an extensive urban area containing a number of hospitals, is it possible that the observed difference could be an artifact?

There is some evidence tending to discount this possibility, derived from the measurement by the same method of the incidence of congenital pyloric stenosis in

the two cities. In Newcastle this was found to be 2.8 per 1,000 live births (Davison, 1946) and in Birmingham 3.0 per 1,000 live births (MacMahon, Record, and McKeown, 1951). The incidence of this disease has been measured on a number of occasions, and is relatively constant in different localities, and we may therefore conclude that the techniques of ascertainment in Newcastle and Birmingham are very similar in their degree of accuracy. Since pyloric stenosis and intussusception are alike in their hospital requirements it also seems safe to assume that the wide difference between the two cities in the incidence of the latter could not be due to a difference in the number of children treated in outside hospitals.

Conclusion

Clinical impressions and previous estimates of incidence suggested that acute intussusception was unusually common in the North of England. Because there have been so few factual studies the incidence of this disease has been estimated a second time in Newcastle and found to be persistently higher (over 4 per 1,000 live births) than in Birmingham (1.5 per 1,000 live births), the only other city for which it has been accurately assessed. The reasons for this difference are at present unknown, but the degree is sufficient to encourage the accurate measurement of incidence in other defined communities and to suggest the need for a more detailed analysis of local factors in the care of young children which might throw light on the aetiology of the disease.

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POLYAGGLUTINABILITY OF THE HUMAN RED BLOOD CELLS

BY

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The phenomenon in which the erythrocytes undergo transformation so as to become agglutinable by any serum, irrespective of the blood groups, can occur *in vitro* or *in vivo*, and presents a problem in correct grouping and matching.

The *in vitro* phenomenon is also known as the "Hübener-Thomsen-Friedenreich" phenomenon, and is seen usually in old blood samples with bacterial contamination. The very similar but more uncommon *in vivo* phenomenon has been termed "polyagglutination" to distinguish it from the *in vitro* phenomenon, termed "panagglutination," perhaps mainly on the ground of earlier observations that autoagglutination is not a feature of the former as it is of the latter. This has not been found to be true in all cases, and the consensus of opinion seems to be that the two phenomena are identical because of the outstanding

fact that in most cases of polyagglutination a bacterial infection can be shown to be present. It is very likely that the enzymes liberated by the infecting organisms activate the "T" agglutininogen *in vivo* just as the enzymes of the contaminating bacteria do *in vitro*.

The subject has been discussed by Reepmaker (1952) and a good review of the recorded cases given.

Case Report

A blood sample from a patient suffering from septic abortion with profound toxæmia was received with an urgent request for blood transfusion. No history of previous conception or blood transfusion was given. The patient appeared to be group AB, Rh+ on repeated groupings by different batches of grouping sera, but one sample each of group AB, A, B, and O blood from stock was matched and only the group O was found compatible. Haemolysis of the incompatible cells by the patient's serum was pronounced. Her serum was tested against cell samples, five each from groups A, B, and AB and 10 from group O, freshly obtained from known donors (Table I). Her cells were tested against sera from these donors and two samples of cord blood serum (Table II).

Serum samples, one each from groups A, B, and AB, were adsorbed by equal volumes of three-times-washed packed cells of the patient, first at room temperature for one hour and then for another hour at 4° C., to adsorb the "T" agglutinin. The reactions of the adsorbed and unadsorbed samples are summarized in Table III. The patient's serum agglutinated at 4° C., group O cells also. Autoagglutination, though not detected at room temperature (near about 36° C. at this place during the season), was quite strong at 4° C. and could not be abolished even after prolonged adsorption at low temperature with group O cells.

TABLE I

	Group A Cells	Group B Cells	Group AB Cells		Group O Cells	
			Rh +	Rh -	Rh +	Rh -
Patient's serum: At room temp. . .	***	***	***	***	—	—
At 4° C. . .	++*	++*	++*	++*	++	++

+ = Agglutination. — = No agglutination. * = Haemolysis.

TABLE II

	Serum, Group A	Serum, Group B	Serum, Group AB		Serum, Group O		Serum, Cord Blood
			Rh +	Rh -	Rh +	Rh -	
Patient's Cells: At room temp. At 4° C.	++ +++	++ +++	++ +++	++ +++	++ +++	++ +++	—

TABLE III

	Serum, Group A		Serum, Group B		Serum, Group AB	
	Ad- sorbed	Non-ad- sorbed	Ad- sorbed	Non-ad- sorbed	Ad- sorbed	Non-ad- sorbed
Patient's cells: At room temp. . .	—	++	—	++	—	++
At 4° C. . .	—	+++	—	+++	—	+++

Cultures were made from the patient's blood and the sample of pus collected from the cervical canal. Blood culture was positive within 24 hours. On bacteriological examination of the cervical swab and the patient's blood the same strain of *Escherichia coli* (typical type I) was isolated. Blood culture was negative a week later and the cervical sample was found unsuitable owing to frequent washings by antiseptic lotions.