Reactions to Antisera

The injection of antiserum derived from horse or other animal may cause either a sudden anaphylactic shock or a delayed serum sickness. Anaphylaxis is extremely rare in the human subject, and in its fatal form is most likely to occur in persons who have some inborn or acquired predisposition to allergic disorders like asthma, eczema, or urticaria. Before giving an injection of antiserum, therefore, the doctor should inquire about a personal history of asthma or hay-fever, particularly from contact with horses, or any family or personal history of allergic disorders. If in doubt an intradermal injection of 0.1 ml. of the serum diluted 1 : 100 should be given; this will produce a local wheal and erythema reaction in a sensitized person, who may then be partially and temporarily desensitized by repeated small injections of the serum.

Serum sickness, developing seven to ten days after the injection of the antiserum, and characterized by an urticarial rash, joint pains, and fever, was common when crude unconcentrated antitoxin was used in large doses. The introduction of concentrated antisera, and later of enzyme-digested "refined" antitoxin given in small doses, has reduced the incidence of serum sickness to less than 3%, so that this complication is now a rare hazard. Antihistaminic preparations locally or systemically will usually give relief. The patient who has had an injection of foreign protein such as horse serum within the past three to six months may develop an acute anaphylactoid reaction, with dyspnoea, pains in the chest, and oedema of the face, within a few hours of receiving a second injection. This type of reaction, while alarming, can usually be prevented or controlled by an injection of 1 ml. of 1 : 1,000 adrenaline. With convalescent human serum, particularly if it is prepared from a pool of donors, there is the small risk of homologous serum jaundice coming on two to three months after the injection. This risk can be largely prevented by "sterilizing" the serum with ultra-violet light and is practically non-existent with concentrated gamma globulin. Injections of whole blood should not be given, because they may induce the formation of rhesus antibodies.

Prevention versus Cure

It is sometimes said in these chemotherapeutic days that there is no advantage in trying to prevent infections that can be easily cured with modern antibiotics. Why, for example, subject people to the inconvenience of T.A.B. inoculations when typhoid fever can be treated effectively with chloramphenicol? A similar argument was used many years ago for diphtheria, when it was hoped that the use of a specific antitoxin would bring this infection under control, but, in spite of all efforts at earlier diagnosis and better therapy, some 60,000 cases of diphtheria, and around 3,000 deaths, continued to occur every year in England and Wales until large-scale immunization was introduced in 1940. As a result there were 957 notified cases of diphtheria and only 49 deaths in 1950, while the saving in hospital beds and in expert medical and nursing care has greatly reduced the total expenditure on this once dreaded infection. Thus it has been calculated that the dramatic reduction in the incidence of diphtheria has meant a saving to Scotland of something over £300,000 a year, while reduction from nearly 10,000 to a few hundred cases annually represents a saving of about 750 hospital beds on every day of the year and an annual saving of some 250 full-time

nurses and a proportionate number of doctors, hospital domestics, etc.

Furthermore, in diseases with insidious onset, such as typhoid fever and whooping-cough, the damage to the patient and his contacts has already occurred before effective treatment can be given. There is little doubt, therefore, that where specific prophylaxis is safe, practicable, and effective prevention is always better than cure. On the other hand, certain infectious diseases, such as lobar pneumonia, cerebrospinal meningitis, and typhoid fever, tend to occur rather sporadically in civilian practice and to affect only a small proportion of the population at risk, so that even if effective prophylactics were available large-scale indiscriminate immunization would not be thought profitable. Where, in special circumstances, the risk is considerable and the prophylactic effective, as happens with typhoid fever among troops on active or foreign service, then obviously prophylaxis is again better than cure.

The specific measures that may be used to protect against particular diseases, and the indications for their use, will be discussed in the next article in this series.

THE INCIDENCE AND PROGNOSIS OF CEREBRAL PALSY

AN INTERIM REPORT

BY

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In Leeds County Borough a special day school with 140 places caters for all types of physical handicaps other than defects of sight and hearing. The more severely handicapped from cerebral palsy attend here, and in addition it is expected that a residential school for the younger cerebral palsy children will be opened in 1952.

Incidence

The survey of cerebral palsy occurring between the ages of 3 and 16 in Leeds was begun in 1947. During that year an assessment was made of all the children on the school roll known to be suffering from cerebral palsy, including those attending ordinary schools as well as special schools. It did not include children already notified to the mental health authority as ineducable and many children under 5. All the children have been examined by Mr. J. M. P. Clark, orthopaedic consultant to the local authority, and by me. Those attending the day school for the physically handicapped have also been examined by Dr. J. D. Pickup, late lecturer in paediatrics, Leeds University.

The first survey in Leeds as published in the Annual Report of the School Medical Officer for 1947 mentioned 97 children, and the annual report for 1949 shows 136. The present figure is 141. The reasons for the rise in figures for Leeds appear to be as follows:

1. The knowledge that some plans were in preparation for the young cerebral-palsied resulted in more young children being referred from the paediatric and orthopaedic departments of the local hospitals. The latest ascertainment figure includes 19 children between 3 and 5 years of age and five not included in the survey who are under 3 years old. Since the school population includes very few children under 5 at the present time, a more

accurate incidence in proportion to the school population might be obtained by omitting the 19 children aged 3 to 5. Again, since the school population includes a minority of children over the age of 15 it would be more accurate to exclude those aged 15 to 16. The number would thus be reduced to 107—that is, 1.6 per 1,000 of the school population, reckoning the school population of Leeds as 66,548. The known figure for the whole country is 1 to 2 per 1,000. Sheffield reports 1.9, and Birmingham 1 per 1,000 (*British Medical Journal*, 1950, 2, 1051) of the school population and later 0.9 per 1,000 (Asher and Schonell, 1950). The American figure is 4 to 5 per 1,000 (Phelps, 1941).

2. Another factor causing the rise is the inclusion of a number of mildly afflicted children, hitherto undiagnosed. These came to light owing to the generally increased interest in cerebral palsy amongst all members of the school health service, who referred for investigation an increasing number of children showing slight symptoms. The reason given to parents and teachers for a child's clumsiness, slovenly speech, and relative dullness compared with his siblings produces a much more sympathetic attitude, and an acceptance of the child's disability as such rather than as original sin. In this more favourable atmosphere the child often improves considerably:

3. The third factor that produces a rise in the numbers recorded between 1947 and now is that the present list includes 14 children notified as ineducable during that time. Eight were notified before starting school; the other six proved ineducable after a trial in school or incapable of further education after profiting for a time.

Value of a Pre-school Clinic

A pre-school clinic has been started for children under 5 years, and for those over 5 years who are too handicapped to benefit yet from a day special school. The children attend twice weekly for physiotherapy and speech therapy (if required), and are provided with transport if necessary. While far from ideal in frequency of treatment owing to the difficulty in obtaining sufficient attendance of skilled personnel, the clinic has proved of great value.

The children make progress, and parents are taught how to help the children at home and are encouraged by meeting other parents in the waiting-room with similar problems. Much useful information is exchanged and a happy atmosphere prevails. Perhaps the greatest value of the pre-school clinic is that the observations of skilled staff over an appreciable period are available for the difficult task of assessing the educability of severely handicapped children. In the light of reports from the speech therapist and the physiotherapist, along with a Terman-Merrill assessment of intelligence where possible, the medical staff responsible can send the child to school with some confidence that he will profit there both educationally and physically, or they may decide that there is evidence from prolonged observation that the child is ineducable—a decision that could not possibly be arrived at from one or two interviews only. Before the pre-school clinic was started valuable places in the day special school had to be devoted to giving these children a trial. This wastage is now largely avoided.

Type of School Suited to Children with Cerebral Palsy

Unlike the voluntary schools, whose screening personnel merely accept or reject a child as suitable or otherwise for that particular class of school, a local authority has to make a recommendation regarding the

place into which the child will fit. Table I shows how 141 children aged 3 to 16 with cerebral palsy have been placed.

Thus about half the children with cerebral palsy occupied a place in a school for the physically handicapped for part if not all of their school life.

TABLE I.—*The Placing of 141 Children Having Cerebral Palsy*

Secondary grammar school	2
Secondary commercial school after day school for the physically handicapped	1
Primary or secondary modern school	37
Primary or secondary modern school, after day school for the physically handicapped	17
Private school after day school for the physically handicapped	2
Day school for the partially sighted, after day school for the physically handicapped	1
Day school for the educationally subnormal, after primary school	5
Day school for the educationally subnormal, after day school for the physically handicapped	10
Private school instead of school for the educationally subnormal	1
Residential school for the physically handicapped	1
Day school for the physically handicapped	21
Home teacher advised	2
Awaiting school for the physically handicapped (all under 6 years old)	14
Under 5 years old, and probably fit for primary school at 5	4
Under 6 years old and probably ineducable	6
Notified to the Mental Health Authority as ineducable	17

Distribution of Intelligence

Table II shows the distribution of innate intelligence amongst the group. The test used was the Terman-Merrill revision of the Stanford-Binet tests, and all the tests were applied by me.

While realizing the difficulties of obtaining a valid intelligence quotient from children suffering from severe cerebral palsy, the findings given below may be of some value, particularly as more than half the children are not so handicapped as to require provision for special physical education.

TABLE II.—*Distribution of Intelligence in the Cerebral-palsy Group (Terman-Merrill I.Q.)*

Less than 35	6 (4.5%)	85-94	30 (22.6%)
35-44	8 (6.0%)	95-104	15 (11.3%)
45-54	9 (6.8%)	105-114	5 (3.8%)
55-64	15 (11.3%)	115-124	3 (2.2%)
65-74	20 (15.0%)	Over 124	Nil
75-84	22 (16.5%)		
Completed			133
Gone to work at 15 and change of address untraced			1
Probably ineducable; no figure possible as yet (under 6 years)			4
Probably educable; no figure possible as yet (under 4 years)			2
Probably educable; no figure possible as yet (under 6 years)			1
Total			141

The difference in the distribution of intelligence between the cerebral-palsied group and a normal group is striking and disagrees markedly with the American estimate (Phelps, 1938) that 70% of children suffering from cerebral palsy have intelligence spread over the same distribution as the general public and that many of these children have a high-grade intelligence when their disability will allow them to use it.

The graph on the next page shows the normal distribution of intelligence compared with the distribution in 133 children suffering from cerebral palsy. It appears that far fewer children fit for an academic or technical type of education will be found in a group of children with cerebral palsy than in a normal group.

The highest proportion of children with cerebral palsy come within the dull group. Those of normal and super-normal intelligence as a whole form only 24.8% as

Graph showing normal distribution of intelligence (Terman-Merrill I.Q., —) compared with distribution of intelligence in 133 children suffering from cerebral palsy (Terman-Merrill I.Q.,).

against 75% in the normal population. Conversely, 33.3% have intelligence quotients under 70, whilst only 3% of the ordinary population come into this category.

This distribution of intelligence agrees closely with the findings of Asher and Schonell in their summary of 354 cerebral-palsy children in Birmingham and district.

TABLE III.—Distribution of 141 Estimated Intelligence Quotients of Cerebral-palsy Groups Compared with Asher and Schonell's Estimation and With the Normal Child Population

I.Q. Level	Present Group		% Asher and Schonell	% Normal Population	Usual Nomenclature	Suitable Provision
	No. of Cases	% of Group				
130	0	0	0.6	1	Supernormal Normal Dull Feeble-minded	Ordinary school
110-129	4	2.8	3.4	22		
90-109	31	22	20.1	52		
70-89	51	36.2	26.8	22		
50-69	30	21.3	22.9		Imbecile Idiot	Special school for E.S.N. Occupation Centre Institution
25-49	12	8.5	10.7	3		
Below 25	5	3.5	11.6			
Not yet assessable	8	5.7	3.9			

The Ineducable Children

Parents may apply for the admission to a residential colony of an ineducable child whom they are unable to care for at home. In addition to a residential colony, Leeds is fortunate in possessing two day-occupation centres under the care of the mental health authority. Most children who are notified as ineducable have the opportunity of attending a day-occupation centre. Transport is provided, and quite severely handicapped children are cared for. The regular regime on graded nursery-class lines for all ages proves beneficial in many ways. The children are happy to be with others and become more independent and more socially acceptable. Parents agree to a child's notification less reluctantly when some training is still provided for the child and when some solution is offered of the domestic problem often created by having a severely handicapped child in the home all day.

When a child appears likely to be ineducable it is advisable to tell the parents early that there are doubts about how much progress the child will make. If the parents can be helped to accept the truth about the child's disabilities, and their confidence in the doctor can be kept, much unhappiness will be avoided. They will not suffer from feelings of resentment that "Authority" has not given their child a fair chance, nor from disappointment as a result of seeking a multitude of opinions or quack remedies. If difficulty arises a further six-months delay may convince those hitherto unconvinced when the greater progress of other children in the pre-school clinic is seen. A visit to an occupation centre will often clinch matters. It should always be pointed out that should the child make unexpected progress it is possible to cancel a notification.

Employability

The placing of cerebral-palsied children in suitable employment when they leave school presents its own difficulties even in a city, such as Leeds, whose industries are avid for juvenile labour. When one or both hands are affected, when speech may still be slightly abnormal, when the intelligence is too poor to allow of clerical work, when there is accompanying epilepsy, or when some of the emotional instability so typical of cerebral palsy may still remain, the problem is a difficult one. A patient with severely crippled legs, or an educationally subnormal child with strong limbs, is much easier to place than one with the mixture of disabilities apt to be found in the spastic child even though each disability may not be severe in itself.

Of 17 educable children who have left school and are over 16 years old, one is having further training in a private "commercial" school, one is working satisfactorily since leaving school, two have just been satisfactorily placed, two are working for relatives, three have had several changes of job and are difficult to place, satisfactorily, four are at long-stay training establishments—e.g., Alton, Oswestry—with a view to home industry such as shoe-repairing, and four are at home unable to work at all.

Of eight children aged 15 leaving school at that age, and therefore all comparatively mildly handicapped and having attended ordinary school, four are working satisfactorily, one has just been satisfactorily placed, one has had several changes of job already, and two have changed addresses and cannot be traced.

From these small groups of children who have left school it would appear that any complete schemes for dealing with cerebral palsy must include sheltered workshops and home industries.

Conclusions

The incidence of cerebral palsy in Leeds children aged 5 to 15 is 1.6 per 1,000 of the school population.

A pre-school clinic is a vital part of any scheme for the treatment and education of children suffering from cerebral palsy.

The condition of half the children has required that part or all of their school life be spent in a special school for the physically handicapped.

Occupation centres do valuable work in rendering the ineducable children more socially acceptable.

The distribution of intelligence is lower than in a similar group of normal children.

The placing of these children in suitable work presents considerable difficulty. Home industries and sheltered workshops are needed for a complete scheme.

Thanks are due to Mr. J. M. P. Clark for much helpful criticism and advice, and to the Leeds education authority and to Dr. I. G. Davies, school medical officer and medical officer of health, for permission to publish this report.

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Preparations and Appliances

A LARYNGOSCOPE BLADE FOR INFANTS

Dr. R. BRYCE-SMITH, first assistant, Nuffield Department of Anaesthetics, University of Oxford, writes: Difficulty is often experienced in exposing the larynx of a newborn baby by those who are not adept, and for this reason intubation in asphyxia neonatorum is rarely practised by the obstetrician or general practitioner. A laryngoscope blade has been designed to give a satisfactory view of the cords whether it is introduced anterior or posterior to the epiglottis, or with the head either extended or flexed. Most other blades for children are not intended for the newborn, and in my hands have not given completely satisfactory results.

The blade has a three-quarter-circle cross-section for the greater part of its length (7.5 cm.), and tapers from a maximum width of 1.8 cm. at the proximal end to 1 cm. at the

"a" represents light carrier.

tip. The distal 2.5 cm. is curved slightly, and although it has an open section it is guarded on the left side to retract the tongue. There is sufficient overhang on the open side to prevent the lips from obscuring the view. The broad flat lower surface does not damage the gums. Though intended primarily for newborn babies, the blade is made long enough for use on children up to 3 years of age. Over a period of six months it has given satisfactory results in this range and has been of value in children with cleft-lips and cleft-palate.

The bulb is mounted on a detachable Melbourne-type light carrier for ease of sterilization and replacement. The blade fits any Longworth laryngoscope handle.

I am indebted to Mr. Richard Salt, of the Nuffield Department of Anaesthetics, for his help in developing and designing this blade, which may be obtained from the Longworth Scientific Instrument Company, Thames Street, Abingdon.

Reports of Societies

CONSERVATIVE TREATMENT OF THE DISK SYNDROME

At a meeting of the Section of Physical Medicine of the Royal Society of Medicine, held at 1, Wimpole Street, W.1, on January 9, there was a discussion on "The Conservative Treatment of the Disk Syndrome." Dr. H. F. TURNER, president of the Section, was in the chair.

Dr. E. J. CRISP, who opened, said that the lumbar disk lesion—a lesion which knew no age limit—was the commonest cause not only of sciatica but of acute and chronic low back pain. Though the disk was a comparatively avascular structure, he believed that repair of annular tears could take place, though slowly, by vascularization from the adjacent spongiosa or from extradural vessels.

Terms such as "slipped" or "prolapsed" disk were most misleading: disks could not slip and seldom actually prolapsed. The usual lesion was an incomplete annular tear resulting in a postero-lateral bulge of greater or lesser degree. Some idea of the extent of the lesion might be deduced from the clinical picture. With a small annular tear, especially if accompanied by injury to the ligamentum flavum, the lumbar spine was usually held in tight lordosis by protective muscle spasm, little or no forward flexion being possible. Conversely, if there was a large posterior protrusion the lumbar curve would be reversed, and though forward flexion might be possible the patient would be unable to stand upright.

Conservative Measures

The object of treatment was to allow any protrusion to reduce, inflammatory reaction to subside, and repair to take place. Possible methods of treatment included bed rest, plaster jacket, traction, manipulation, epidural injection, physiotherapy, and spinal brace, etc. Cases of average severity usually did well with complete bed rest for three or more weeks. But quite a number failed to respond, usually because complete rest was impracticable. The plaster jacket was a much more effective method of treatment: it splinted the back, allowed repair to take place, and was good for the morale, as the patient could be ambulatory. It was essential to wear the jacket for two to three months, and a spinal brace for a similar period subsequently.

The case with the reversed lumbar curve could often be relieved dramatically by sustained traction on the traction table, the protrusion reducing and the lumbar spine regaining its normal shape; after that a plaster jacket was applied. If traction was not available the protrusion reduced equally well but more slowly in a plaster jacket, though it was necessary to remove the jacket when reduction had occurred and apply a new one with the lumbar spine in the corrected position. Manipulation was contraindicated in the acute stage, but was often effective for the chronic case or for the relief of residual pain following immobilization in plaster. Sustained traction might be equally effective for this type of case. Short-wave therapy for the relief of pain and inflammation, and hyperextension exercises to strengthen the sacrospinalis group of muscles, were rational and valuable physiotherapeutic measures, but they should not be used to the exclusion of rest, but rather as supplementary measures in the resistant case. Exercises which flexed the lumbar spine should be avoided, and lumbar flexion allowed to return spontaneously. The vast majority of patients with lumbar disk lesions could be relieved by conservative methods if sufficient attention were paid to details.

Cervical Disk Protrusions

Dr. M. KREMER considered that the commonest cause of brachial neuralgia was probably a lesion in relationship with the shoulder-joint. Where a cervical disk protrusion