Hospital Clinics.

ACUTE POLIO-ENCEPHALITIS AND POLIO-MYELITIS.

Dr. Leonard Guthrie [1] gives an interesting account of the acute cerebral paralyses of children which depend upon an acute encephalitis. He points out that it is now recognised that infantile paralysis is the same disease whether the lesion affects, as it most commonly does, the motor cells in the anterior cornua of the spinal cord, or the motor cells in any part of the upper motor tract. The evidence in favour of this unity of the disease is largely circumstantial. It is well known that infantile paralysis occurs epidemically, and in such epidemics one member of a family may be stricken with a cerebral lesion while another may show the typical symptoms of frank anterior polio-myelitis. Thus, Dr. William Pasteur has recorded the case of a family of nine children, of whom five were seized almost simultaneously with a febrile illness. One of these, a boy of 12 years, developed on the third day a paralysis of the ordinary spinal form affecting the whole of the left upper limb. A second boy, aged nine years, developed a spastic hemiplegia on the right side on the seventh day of his illness, with transient paralysis of the right side of the face and palate. This was obviously a cerebral lesion. A third child on the fifth day showed a rigid paralysis of the left lower limb, with wasting and loss of knee-jerk in the affected member. This was probably a spinal lesion. In two others tremors lasting a few days followed the fever, and in the case of one of them a transient strabismus was noted. Here, again, the lesion was probably cerebral.

The morbid anatomy of acute anterior polio-myelitis gives the picture of an acute congestion accompanied by thrombosis of the smaller vessels in the affected area, with round-celled exudation, and small hæmorrhages in the grey matter of the anterior horns supplied by the anterior spinal arteries. The secondary results of the lesion are anæmic softening of the areas involved, and ultimately absorption of the necrotic products and cicatrisation. In the case of the acute cerebral palsies the morbid picture has been shown by Dr. F. E. Batten to be precisely identical with the above, and the pathological unity of the two diseases is placed beyond doubt. Of the ætiology little definite is known. The appearance of the two varieties of the disease in epidemic form, and their special prevalence during certain months of the year, notably the late summer and early autumn, point to an acute infection by micro-organisms, but so far no specific microbe has been associated with the lesion. None the less the balance of probability is in favour of a specific infection, although a good number of cerebral cases have been reported as occurring in the wake of other acute specific fevers such as measles, whooping cough, scarlet fever, diphtheria, and influenza.

The invasion of both varieties is marked by constitutional symptoms of variable gravity. In the spinal form the invasion is sudden and associated with fever, vomiting, pains in the head, back, and limbs. In a few hours or days one limb or more may be found flaccid and motionless. In the early stages the affected limbs are acutely tender to the touch, but in time all the symptoms subside, leaving an entire limb, or certain groups of muscles in it, in a state of flaccid paralysis. The muscles waste, the tendon reflexes disappear, the temperature of the limb falls below that of its fellow, and the electrical reaction of degeneration is established in the paralytic muscles. The paralysis is always more extensive at first than it is likely to prove ultimately, and the prognosis must therefore be guarded by a tendency to optimism.

In the cerebral form the invasion is similar, but, as might be expected, the symptoms are more severe and lasting; in addition to the symptoms enumerated for the invasion of the spinal form there may be delirium, or stupor, or convulsions. As is the case with the spinal variety the ultimate lesions are seldom as severe as the early stages of the malady suggest.

Acute encephalitis has been divided for purposes of clinical description into two forms, a superior and an inferior, according as the lesion is situate in the upper or lower brain areas.

1. Polio-encephalitis superior may affect:

a. The præfrontal convolution, in which case profound and lasting mental changes may be expected.

b. The motor areas either in the cortex or in the descending motor tract, giving rise to hemiplegia or diplegia.

c. The cerebellum or its peduncles, in which case the result is a disturbance of equilibrium and ataxia.

d. The occipital lobes, where it will probably occasion blindness due to involvement of the double half-vision centres.

2. Polio-encephalitis inferior is the name applied to lesions of the disease situate below the corpora quadrigemina. In such cases the result is ophthalmoplegia of different kinds, or, when the bulbar nuclei are attacked, bulbar palsy of a degree varying with the extent of the involvement.

The author has collected a series of illustrative cases, an outline of some of which will assist the conception of acute polio-encephalitis in varying situations.

Case 1. A child, previously healthy and in all respects normal, was attacked, at the age of two-and-a-quarter years, with a series of convulsions, followed by a stupor which lasted for a week. At the end of the week, on recovering consciousness, she was unable to talk. She could stand, but could not walk, although there was no loss of muscular power, nor any alteration of the normal reflexes. She was an idiot of a most degraded type, and showed no sign of improvement for the six months during which she was kept under observation. Dr. Guthrie considers that the lesion was certainly a præfrontal one.

Case 2. A girl of six years, who, after an onset somewhat similar to the last, gradually passed into a condition of typical cerebellar ataxy. She has gradually improved, and, though lethargic, is not

mentally deficient. The lesion is considered to have been cerebellar.

Case 3. A boy of twelve who, a month after a mild febrile attack of a nature doubtful at the time, was gradually attacked by a right hemiparesis, of cerebral type, associated with loss of vision in the opposite eye. He recovered his strength completely, but his vision in the affected eye remained impaired. Dr. Guthrie considers that the symptoms depended upon a thrombosis of terminal branches of the left Sylvian artery, and of its offshoots to the left optic nerve—*i.e.* a retro-bulbar neuritis.

Case 6a. *Encephalitis of Occipital Lobes.*—The case of a child who became completely blind for three weeks without any other sign of ocular disease. Sight was gradually regained, but the patient became subject to *petit mal.*

Case 7. *Acute Bulbar Palsy.*—A boy of nine had a sudden febrile attack, on the second day of which he choked while taking his medicine, could not laugh or cough, and could not speak intelligibly. His temperature rose to 104° and remained high for a week. At the end of the fourth week all symptoms had subsided with the exception of slight weakness in swallowing. The knee-jerks were normal, and it is considered that a diphtheric origin for the paralysis can be excluded.

In conclusion, the author observes that a recognition of the fact that acute encephalitis is by no means a very rare disease will assist in the avoidance of confusion between it and tuberculous meningitis—a point of much importance in view of the great difference in the outlook of the two diseases. He observes also that the conception of a primary thrombosis as the underlying feature of the brain lesions, affords a simple explanation of recovery following symptoms which appear, from their extent, to depend upon most extensive involvement of brain tissues. A mild and temporary condition of thrombosis is compatible with complete restoration of function, and the degree of recovery will vary inversely with the amount of structural damage occasioned by the thrombosis. The interesting suggestion is made that many cases of paralysis generally regarded as hysterical may depend upon a capillary thrombosis, and that the fleeting paralyses which often usher in disseminated sclerosis may similarly own a thrombotic origin.

[1] Clin. Jour., July 5, 1905.

TRACHEAL INJECTION: ITS SIMPLIFICATION AND ITS USE IN PULMONARY TUBERCULOSIS.

In a lecture delivered in English at the Hôtel Dieu, Dr. Mendel points out that intratracheal medication in phthisis pulmonalis has failed to become popular in consequence of the expert manipulation required for its practice, and because many of the substances administered have been irritating, and therefore provocative of cough. He claims to have devised a method by which tracheal injection can be performed without any special laryngological training, and maintains that non-irritating fluids introduced into the air-passages do not cause either reflex, cough, or suffocation. The basis of this method is a recognition of the fact that, in the absence of the act of swallowing, the œsophagus is a closed tube, so that when, in these circumstances, a small quantity of non-irritating liquid is projected against the wall of the pharynx, it runs into the only opening situated inferiorly—namely, the glottis. The fluid may be directed against the posterior wall of the pharynx (medial method), but it is more convenient to project it against the lateral wall. The syringe employed is a modification of Beehag's instrument. It is introduced through the buccal cavity with the curve of the nozzle in a horizontal plane. The outer side of the curve is then firmly applied to the base of the left faucial column by which means steadiness is secured. The nozzle thus rests horizontally in the glosso-epiglottic groove with its orifice directed to the lateral wall of the pharynx, and the fluid is now forcibly ejected so that it flows round to the posterior wall, whence it enters the glottis. Unless the syringe is steadied in the manner described the forcible ejection may be attended by movements of the nozzle and consequent irritation of the pharynx. During the manipulation the patient remains passive and breathes without effort. After the syringe is withdrawn the tongue must be kept protruded for a few seconds, as it is only under this condition that the funnel-shape of the pharynx is maintained and the entrance of fluid into the larynx is facilitated. Then the patient spits out any small quantity of liquid that may remain in the pharynx and rinses his throat and mouth. The method is thus much more simple than the usual manipulation in which fluids are introduced directly through the glottis, being delivered from a syringe the point of which is guided by the aid of a throat mirror. In Dr. Mendel's plan no laryngeal mirror is used and a head mirror is only advisable when artificial light has to be employed.

Regarding the medicines suitable for tracheal injection Dr. Mendel condemns menthol and creosote as too irritating. He employs eucalyptol (5 to 10 per cent.) and gomenol (5 to 50 per cent.) dissolved in olive oil. At first a very weak solution should be used in order to test the sensibility of the patient. Exceptionally the trachea will only tolerate, at least at the outset, a solution containing not more than one to two per cent. of the active ingredient. But this is quite unusual, and when such uncommon sensibility exists, as shown by cough, etc., it is at once soothed by an injection of pure olive oil. The treatment consisting of a syringeful of medicated fluid (three centimetres) thrice daily is continued for a month.

The results of this treatment in cases of consumption are early shown in an improvement of the respiration, at first only for a time after each injection, but later becoming permanent. The chest expansion becomes greater when the number of respirations is diminished. Consequently the defective intake of air is overcome, with the natural consequence of improved appetite and gain in weight and vitality.

In addition to these general benefits the tracheal injections remove phlegm from and cleanse the larynx; they diminish cough and expectoration; and they remove abnormal secretion from the broncho-pulmonary surfaces as is shown by the disappearance of various forms of rale. The treatment may be adopted not only in cases of phthisis