Short Notes and Clinical Cases.

A CASE OF MENINGISMUS OF OBSCURE ORIGIN FOLLOWING STRETCHING OF THE ADDUCTORS OF THE HIPS.

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THE following case is published in the hope that a discussion may be provoked which may throw light on the causation, as no similar case could be traced in the literature, and none of the causes of meningismus referred to in text-books and articles on the subject were found operative in this one.

Our attention was first drawn to the possible association of meningismus with mechanical stretching of the hip adductors by a case of tubercular disease of the hip in a girl of ten. After the hip, the condition of which was quiescent, had been stretched on a frame to obtain further corrective abduction, she developed a temperature with meningeal symptoms of headache, stupor and neck rigidity. These all passed off in 36 hours without lumbar puncture, after the child was removed from the frame and the tension relaxed. However, as the gastro-intestinal functions were deranged at the time, it was supposed that the condition was toxæmic, either from absorption from the bowel, or possibly from the tubercular focus.

The present case, which is much more definite, is that of a girl, age nine years, admitted to hospital for the treatment of neglected congenital dislocation of the hips, who, shortly after the application of a Jones' hip-abduction frame, developed signs of meningismus, with transient loss of consciousness, slight convulsions and great increase of tension in the cerebro-spinal fluid, which, however, was clear and sterile on culture. Removal of the frame seemed to play a part in the clearing up of the symptoms, although some weeks later it was re-applied without actual recurrence; nevertheless, every time the tension on the hip adductors was increased by abducting the leg-pieces one or two holes, there was a small rise of temperature the same night.

The problems are: Can the cerebral symptoms have been induced entirely by mechanical means, possibly through some obscure reflex disturbance of vascular tonus under the control of the vegetative nervous system, or was the connection quite a chance one, in which latter case, what was the cause of the meningismus?

It is obvious that, if muscle stretching alone can be proved to have acted as an exciting cause, the case is of great interest to all those who have under their care large numbers of orthopaedic cases, requiring treatment by this, or similar, apparatus.

The following are the details of the case.

CASE HISTORY.

Stella H., age nine years, with no history of previous illnesses, except a fall from a table at one year, was admitted to Children's Orthopaedic Hospital, Bath, on August 8, 1926, suffering from unreduced congenital dislocation of both hips. She had extreme lordosis and walked badly with a waddling gait, the hips being very unstable.

Aug. 9. Abduction frame applied, practically no tension being put on adductors of the hips.

Aug. 16. Tooth extracted under ether, there being nothing unusual to note in connection with the anaesthetic.

Aug. 27. A small deep boil which had been present on one buttock since admission, increased in size and was fomented.

Aug. 28. Boil opened by crucial incision under ether, which was again taken normally. The pus grew abundant *staphylococcus aureus*. After this there was very little discharge from the wound, which healed rapidly.

Sept. 2. Legs abducted more till adductors just tense. Only tiny granulating area left on buttock.

Sept. 3. 6.45 a.m. Complained of a little pain in left foot; nil found to account for it.

7.30 a.m. Bed made and nurses noticed nothing wrong with the child.

8 a.m. Day Sister passing, noticed a curious blank expression on her face and on examination found her unconscious, pale, sweating freely. The pupils were widely dilated, there was no conjunctival reflex, and her pulse was very weak but not irregular.

A few minutes later, the eyes were rolled upward, and there was a little twitching of the right side of face. She had difficulty in swallowing some brandy which was given, as if, Sister said, she had a spasm of the pharynx.

A quarter of an hour later could swallow, but kept murmuring "No more." Pupils became pinhole. Back was slightly arched and neck stiff. No vomiting or incontinence.

8.40 a.m. Seen by one of the writers. (M.F.B.)

Child drowsy, but responded to request to put out the tongue; then kept on putting it out at intervals. Pupils small, but acted to light. No squint or nystagmus. Abdomen not distended. Skin warm, not flushed. Taken off frame.

9.40 a.m. Seen by second writer (R.G.).

Child still drowsy, but could be roused. Complained of occipital headache; slight rigidity of neck. Pupils equal and active; no squint or nystagmus, no Babinski reflex, all tendon jerks brisk. Urine showed no abnormality. Lumbar puncture advised.

12.30 p.m. Lumbar puncture. Free gush of 40 c.c. of clear fluid. When this was withdrawn, fluid only dripped out during crying. Pathologist's report on fluid: cells under 5 per c. mm.; other characters quite normal.

Widal negative for typhoid and paratyphoid; urine sterile. Faeces: no organisms of typhoid group; no non-lactose-fermenting *B. coli*; no pathogenic streptococci.

Symptoms disappeared almost entirely directly after lumbar puncture, the child talking rationally and taking nourishment.

Sept. 5. All symptoms gone and no abnormality made out except a little twitching of right hand and weakness of its grip, while the tendon jerks of right limbs were a little less brisk than those on left side. Constipation and coated tongue.

Sept. 6. After seeming normal in morning, about 12.30 p.m. began to complain of headache, and temperature rose to 100° . No other change in condition. After this, condition appeared normal, except that temperature remained up to 99° for three days, after which it rose up to over 99° almost every night.

Sept. 25. Frame re-applied, without much abduction. This was not followed by any reaction.

Sept. 28. Frame abducted two holes. Pain and rise of temperature to 100° in evening, so abduction reduced.

Oct. 8. Temperature at 100° at night with nothing to account for it. After this the frame was abducted once without reaction, but on the second occasion this was followed by a rise in the temperature to 99.8° , about which it remained for three days; a further abduction sent it up to 102.6° , while an immediate fall followed diminution of the abduction.

Since that, increase in the abduction has twice been followed by small temperature reactions, and once by none.

Nov. 26. She complained of occipital headache, which was relieved by aspirin and potassium bromide, without development of further symptoms, nor did this follow any interference with the frame.

DISCUSSION.

It seems obvious by a study of the temperature chart of the above case, that whenever the adductors of the hips were put on the stretch, with two exceptions, a mild febrile reaction followed the manipulation, however gently it was carried out. The meningismus, with proved excess of cerebrospinal fluid, appears to have represented the first of these reactions.

If there is a definite connection with the use of an abduction splint, it is curious that those who have had large series of these cases under their care for many years should not have come across and recorded any.

Professor Osgood of Harvard, in a personal letter, states that though he has noted the liability of spastic cases to shock in connection with severe stretching of the muscles round the hip-joint, yet he has never seen meningeal symptoms in such cases.

It may be mentioned that a sporadic case of scarlet fever had developed in the hospital within two weeks before, and another a similar period after, the attack of meningismus recorded here, but this child was not exposed by direct contact with either and never showed the slightest symptom of this disease. Moreover, Dr. Caiger has been kind enough to tell us that in all his experience he has never seen meningeal symptoms form the only manifestation of scarlet fever, unassociated with some at least of the other typical symptoms.

Great care was taken to exclude all possible toxic influences in this case.

1. *General infections*.—The child has had no general infection either before entry to hospital or since.

2. *Local infection*.—A carious tooth was removed a fortnight previously, but there was no apical abscess associated with this.

A boil had been opened five days previously and was only represented by a small clean granulating surface at the date of the attack.

3. *Intestinal tract*.—No disturbance; constipation followed but did not precede the attack. Examination of blood and stools entirely negative.

4. *Urinary tract*.—Examination negative.

5. *Upper respiratory tracts*.—Examination negative.

6. In an open-air hospital in summer, the question of sun-stroke must be considered. On the day before the attack the child was not put outside and there were only 3.8 hours of sun that day. Maximum shade temperature 78.4°.

If toxæmia or infection can be ruled out, is there any other possible explanation?

Professor Osgood has noticed that in certain cases sudden stretching of the adductors produces shock. Recent opinions on this difficult subject appear to agree that one of the causative factors is a profound disturbance of vasomotor control, as a result of noxious afferent impulses. It may be possible that, under slightly different circumstances, the balance in pressure between the blood and the cerebrospinal fluid within the skull is disturbed and with a too rapid recovery of the systemic vascular tone, the absorption of cerebrospinal fluid cannot restore the balance sufficiently rapidly to prevent symptoms of temporary intracranial pressure arising. This would explain the immediate relief on removing pressure by lumbar puncture and the fact that in less severe cases the symptoms gradually disappear spontaneously even if lumbar puncture is not resorted to.

As this case is of some theoretical and practical interest, it is hoped that neurologists and orthopædic surgeons will combine to throw some light on what appears to be a baffling and somewhat disturbing condition.