

CLINICAL MEMORANDA.

THE TREATMENT OF CERTAIN SEQUELÆ OF HEAD INJURIES BY THE INTRASPINAL INJECTION OF AIR.

ENCEPHALOGRAPHY, the removal of cerebro-spinal fluid by lumbar puncture and its replacement by air, followed by *x-ray* examination of the skull, has in the past few years been employed frequently for diagnostic purposes. The object of this note, however, is not a discussion of the procedure from the point of view of diagnosis, but to put in a plea for its use as a means of treatment in certain cases of disability following head injury. The following case indicates what may be achieved by this means:—

M. B., male, 28 years, a patient of Dr. Welsh, Motherwell, sustained a severe head injury in January, 1930. While driving a car he went over a railway bridge, and landed on the railway lines thirty feet below. The hood of the car was up, and broke his fall. Unconsciousness lasted fourteen hours; *x-ray* examination revealed no fracture. Thereafter his history was one common after a head injury of this degree of severity. He suffered greatly from *headaches*, often severe enough to cause sleeplessness, so that some nights he got no sleep at all. They were characteristically worse in the morning, and aggravated by stooping. Their location was left occipital, but they radiated over the whole head. *Dizziness* was likewise troublesome, and, like the headaches, was worse in the morning. In addition to these common sequelæ he had a complete *amnesia* for everything prior to his accident; he had to be told his brother's name and where he stayed, and retaught the geography of his own town.

Physical examination, neurological and general, was quite negative.

On 12th November, 1930, 100 c.c. of cerebro-spinal fluid were withdrawn by lumbar puncture and replaced by a corresponding amount of air. The fluid had normal characters,

but was under a pressure of 240 mm. (about 100 mm. above normal). Eight days later his condition was as follows:—Headache and giddiness had disappeared: there was, in addition, an unexpected recovery of memory for events before the accident; thus, he could describe in detail the stages of his unfortunate car journey up till a short period before the smash. A manometric reading of cerebro-spinal pressure at this date was 120 mm., a normal figure.

When last under observation (in March) he was in good health, having been entirely free from headaches and giddiness since he left hospital. His return of memory had persisted.

Comments.—These cases of post-traumatic headache and giddiness are sufficiently common and sufficiently troublesome to treat, so that anything which promises to afford relief should be considered seriously. Wilder Penfield was the first to advocate this procedure, and his paper (*Surgery, Gynecology and Obstetrics*, vol. xiv, 1927, p. 747) should be consulted. It is not proposed to discuss the *rationale* of the method. In the above case the reduction in cerebro-spinal pressure to a normal level eight days after air insufflation would seem to indicate that in this case, at least, air injection acted by overcoming some obstacle to the free circulation or absorption of the cerebro-spinal fluid.

The *technique* is simple enough. After lumbar puncture and manometric estimation of pressure, cerebro-spinal fluid is withdrawn in quantities of 10 c.c. at a time, and replaced by a corresponding amount of sterilized air. The patient should be in the reversed Trendelenburg position with the site of headache uppermost, and the replacement should continue till no more fluid can be obtained. Injection throughout should be controlled by manometric readings, to make certain that the cerebro-spinal fluid pressure never reaches above the normal. In the conscious patient there is usually a good deal of headache and nausea, so that a light general anæsthesia is advocated. The patient is put back to bed in a position such that the site of his headache is uppermost. Headache persists for a few days after injection, but should have disappeared entirely in about a week's time.

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