Correspondence

Archives of Disease in Childhood, 1976, **51**, 399.

Hydrocephalus treated by compressive head wrapping

Sir,

The recent report by Porter (1975) is stimulating and seems to attract attention. Everybody would agree that the currently used shunt procedures, ventriculo-atrial or ventriculoperitoneal, are far from ideal for the reasons he gives. However, we wonder whether it is not precipitate at this stage to recommend the head wrapping method to paediatricians as a viable alternative to shunt dependency in treating neonatal hydrocephalus. It is a relatively new method, tried in a very limited number of children, and so far no long-term follow-up information is available.

Neonatal hydrocephalus is a symptom and not a nosological entity. It is not sufficiently clear from previous reports (Epstein, Hochwald, and Ransohoff, 1973; Porter, 1975) whether head wrapping is indiscriminately recommended for any neonate with moderate hydrocephalus, or whether it is intended as treatment in only those children with associated meningo-myelocele. In trying to assess the value of this newly proposed method it is desirable to know as much as possible about the intracranial anatomy before starting treatment. A simple 'bubble' brow-up ventriculogram is not enough for this purpose. It might well be that certain 'types' of hydrocephalus (e.g. basal cistern block, aqueduct stenosis, Arnold-Chiari malformation, etc.) respond better or worse to head wrapping.

It is not easy to evaluate the results of this method of treatment by head circumference measurements since these can be quite misleading and may not reflect ventricular size. This problem can be overcome without the need for encephalography by newer methods (e.g. computerized axial tomography, ultrasound), but these, as a rule, are not yet freely accessible to most paediatricians. Children with repaired meningo-myeloceles considered to have 'arrested' hydrocephalus (without shunt or without functioning shunt) have developed hydromyelia with deterioration in lower limb and bladder function in a significant number of cases (Hall, Campbell and Kalsbeck, 1975). The majority of these children have an associated Arnold-Chiari malformation. It seems to us to be possible, therefore, that by compressive head wrapping not only 'the pathways of (CSF) absorption have opened' (Porter, 1975) but the central spinal canal is kept open as well, thus contributing to hydromyelia formation with its possible consequences.

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Dr. Porter replies as follows:

I welcome the opportunity to reply to the points raised by Drs. Boltshauser and Cavanagh. Epstein, Hochwald, and Ransohoff (1973) have laid down specific criteria for the selection of cases for treatment by head wrapping, and I accept these. To save space in my short report I did not quote them, but merely referred to their paper; however, to avoid confusion I would like to reiterate their criteria here.

Each case should fulfil them all: (1) Progressive hydrocephalus with normal or only slightly increased intraventricular pressure. The pretreatment pressure in published cases has been 180–220 mm H₂O (Epstein *et al.*, 1975). (2) Confirmation of the diagnosis by ventriculography. (3) Mild to moderate ventriculomegaly (cortical mantle >1.5 cm). (4) Good general medical condition. Within these criteria, the treatment has been used for cases of hydrocephalus with and without meningo-myelocele.

I agree that a full series of ventriculographic views is desirable, and this was done in the case I reported, hence I was able to state occipital as well as anterior cerebral mantle thicknesses. I quoted brow-up measurements not to imply that a single view would suffice, but to allow comparison with Epstein *et al.* (1973).

It is because serial head circumference measurements may not reflect ventricular size that Epstein *et al.* (1973) supplemented these with repeated follow-up ventriculograms, and I used ultrasound (Porter, 1975). Epstein *et al.* (1975) now have access to computerized axial tomography (EMI scan) for the same purpose.

Nevertheless, head circumference measurements are widely used in the routine follow-up of cases treated with conventional shunts, and if they are good enough for that, they should be admissible evidence in head-wrapped cases too. Most hospitals in the U.K. large enough to support a paediatric service have ultrasound equipment as it is widely used to measure the fetal biparietal diameter during pregnancy. Its use in infancy to measure the anterior cerebral mantle is a skill which the average paediatrician could soon learn.

The possibility of the future development of hydromyelia in children whose hydrocephalus is treated with head wrapping remains a matter for speculation. Hall, Campbell, and Kalsbeck (1975) only reported 5 cases,