

Poster presentation

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Protein changes in the cerebrospinal fluid of the different types of perinatal human hydrocephalus

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Background

Hydrocephalus is a disorder characterized by brain ventricular dilation and excess of cerebrospinal fluid (CSF), in many cases its etiopathic origin is acquired as: post-hemorrhage, meningitis and tumours. But, there is no attributable cause in 45% of hydrocephalus cases and foetal hydrocephalus due to aqueductal stenosis is one of the two main groups of non acquired or congenital hydrocephalus, however whether narrowing of the aqueduct of Sylvius is cause or consequence of hydrocephalus is discussed by different authors. Anyhow, most investigators describe an alteration in the SCO and certain circumventricular structures in the hydrocephalus, that can even occur before hydrocephalus is present and of course before the aqueduct stenosis. The objective of the present work is to investigate probable changes in the protean composition of the CSF in perinatal hydrocephalus and to analyze, in those liquids, the presence of soluble proteins that are immunoreactive or antibodies against Reissner fibre proteins and human foetal SCO extracts

Materials and methods

We have used CSF from a total of eight foetal and perinatal hydrocephalic humans: Dandy-Walker malformation, post-hemorrhagic hydrocephalus, mielomeningocele, 38

and 40 gestational weeks (GW) of human foetal hydrocephalus, tetra ventricular hydrocephalus and tri ventricular hydrocephalus. CSF from a normal human newborn was also used. An electrophoresis study (sodium dodecyl sulphate-polyacrylamide gel electrophoresis SDS-PAGE, 5–15% gradient) and immunoblot with anti-p15 and AFRU were performed

Results

The electrophoresis study showed that the total amount of protein in the hydrocephalic CSF was different depending on the kind of hydrocephalus and age. We found a total of four protein bands (90, 250, 550 and 630 kDa) in the hydrocephalic CSF that were not present in normal CSF and four protein bands (17, 30, 120 and 165 kDa) scarcely visible in this liquid. We must emphasize that the 90, 250 and 630 kDa were observed in more than four types of hydrocephalus and not in the normal CSF. Western blot study with AFRU marked the 42, 61, 72 and 100 kDa in all hydrocephalus cases and the control. A 120 kDa band was only observed in 3 types of hydrocephalus. p15 was mainly expressed in the tetra ventricular hydrocephalus

Conclusion

This finding and the alterations described in the rats, mice and human hydrocephalic foetal circumventricular organs and structures, support the possibility that the secretor material released by the SCO and other circumventricular structures into the CSF is altered in the foetus and infant human hydrocephalus.

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