

## IV ventricle choroid plexus study in several cases of hydrocephalus human fetuses

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### Background

The choroid plexuses, under normal conditions of development, are formed by a specialized ependymal epithelium. This epithelium consists of a layer of cubic cells with rounded nuclei in the central position and microvilli on the surface. The choroid plexus is mainly involved in the production of cerebrospinal fluid. The aim is to analyze the expression of aquaporin-1 (AQP1) and transthyretin (TTR) during fetal development and hydrocephalus.

### Material and methods

In this study, the pattern of development of the expression of AQP1 and TTR in the choroid plexuses (ChP) of the IV ventricle was analyzed by histological and immunocytochemistry methods in control embryos from 10 to 24 GW and hydrocephalic from 19-22 GW.

### Results

In embryos with tetraventricular hydrocephalus, the nuclei of the ChP epithelium are located in the basal position, while in the control the nuclei are centrally located. In the Arnold Chiari fetus, the nuclei are rounded and larger than in the controls and centrally located. In the other cases of hydrocephalus of unknown origin, the epithelium presents an appearance pseudostratified. The AQP1 expression was lower in the cases of hydrocephalus than control and was observed in the apical and basolateral zone. The expression of TTR was located in the cytoplasm and membranes of the epithelial cells, but in hydrocephalus, the TTR intensity was high in the apical pole of the cells.

### Conclusions

The increasing expression of AQP1 and TTR protein reflects a progressive increase in filtration capacity, which probably reflects the functional maturation of these cells during the prenatal development period. In the fetus with hydrocephalus, the amount of AQP1 in the fetal brain could restrain the production of CSF and contribute to maintaining water balance.