

Introduction

Extreme hydrocephalus and hydranencephaly are conditions characterized by an enlarged head circumference and a virtual absence of cerebral mantle (1) which standard treatment is shunting. (2) It is generally accepted that if there is any remaining cortex, it will not be functioning. (3) 18F-FDG PET/CT confirms this, revealing the absence of gray matter activity in the bilateral cerebral hemispheres, (4) but there are remarkable discrepancies between cerebral and cognitive conditions. (5) The aim of this study is to review the clinical and tomographic relevant characteristics of post-shunting patients.

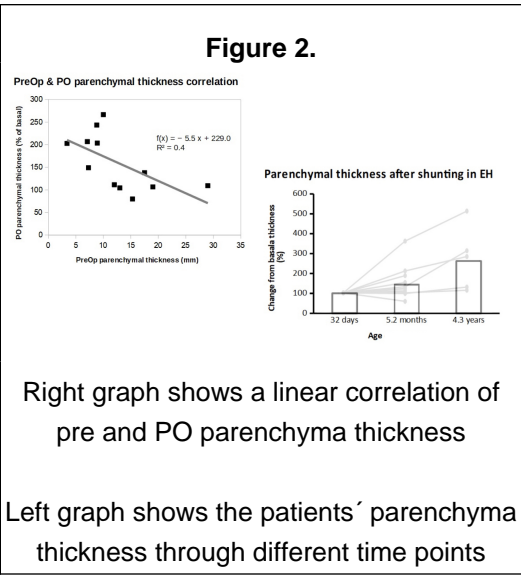
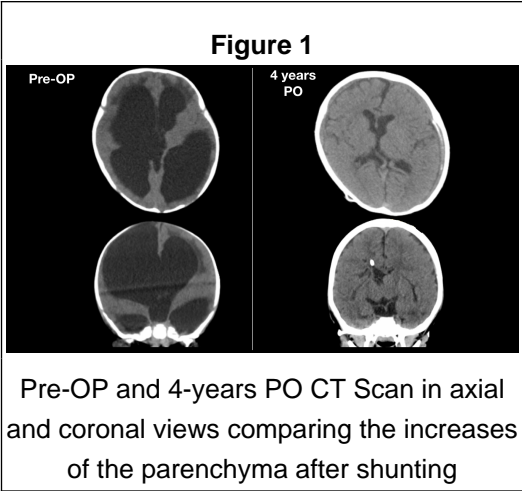
Methods

We measured Pre-OP and PO parenchyma frontal and parietal thickness of 12 pediatric patients with extreme hydrocephalus, correlating the findings with sex, age of shunting and head circumference.

Results

All patients were shunting. PO time frame was 6 months to 4 years. Comparing Pre-Op and PO parenchyma thickness of the patients; one third (n=4) did not show signficative changes, 41% (n=5) increased their parenchyma 10-50% and 25% (n=3) showed increases of 80 to 400% their initial parenchyma thickness. (Figure 1)

The analysis between PO parenchymal thickness with age of shunting, sex and initial head circumference did not show significant correlation but there is a linear tendency (R2=0.4) between pre-Op and PO parenchymal thickness, especially in the frontal lobe. (Figure 2)



Conclusions

Shunting gives space to develop/generate parenchyma even 400% their initial parenchyma thickness; our new hypothesis is that the “new parenchyma” is glial tissue, which could be isolating the neurons between them. If this hypothesis is confirmed, the standard treatment (shunting) should be changed to a precise treatment according to the parenchyma thickness. Therefore, we would like to do further studies to correlate psychomotor and cognitive development to their parenchyma thickness, spectroscopy and tractography

Learning Objectives

By the conclusion of this session, participants should be able to describe the differences of hydranencephaly and extreme hydrocephalus, discuss in small groups the importance of the parenchyma thickness and identify an effective treatment according to intracranial pressure, head circumference and parenchyma thickness of each patient.

References

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