The case of the regenerating cortex

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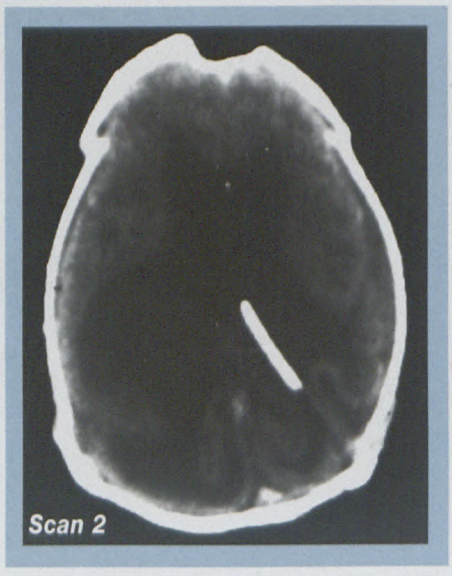
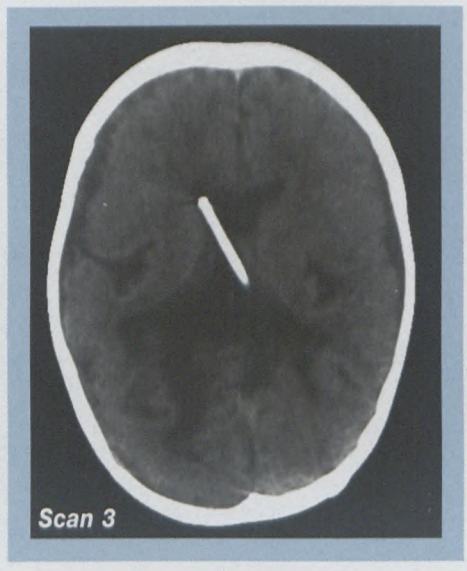
When shown the scan of a patient with gross hydrocephalus, colleagues often ask whether there is any point in treating the patient. The CT scans reproduced here dramatically show the process of cortical regeneration in a neonate presenting with congenital hydrocephalus .The first scan is two days post-delivery, the second immediately after insertion of a ventriculo-peritoneal shunt, and the final scan at age two. The child is developmentally normal on clinical testing.


Scan 1


Scan 2


Scan 3

Until recently there were few studies concerning reversal of the pathological changes following shunting. Newer animal models are showing that there is indeed a reversal in at least some of the deficits occurring with hydrocephalus, if treated early: remyelination can occur, cortical vasculature may return to a normal configuration, there may be restoration of ependyma and periventricular capillaries, and there is at least partial restoration of cortical gray matter cytoarchitecture.

These processes are as yet still poorly explained, but these scans demonstrate well the macroscopic regeneration of the cerebral cortex with early treatment of hydrocephalus

Reference

Choux M et al. *Paediatric neurosurgery.* Churchill Livingstone. 1999.