

Morphometric analysis of the cerebral cortex in the developing baboon

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Abstract

Morphometric analysis of the wall of the cerebral cortex in 49- and 50-day old baboon foetuses was carried out using formalin-fixed stratified serial sections of the heads. Four zones -medial, superior, lateral and inferolateral- in the cortical wall of the left cerebral hemisphere were observed from frontal to occipital regions. In each zone, the thickness of the wall and laminae was measured with a calibrated integrating graticule using a light microscope. The relative volume of the cortical wall was 36-40% of the left cerebral hemisphere. The cortical wall increased progressively in thickness from the medial to superior, lateral and inferolateral zones. Five laminae of varying thicknesses composed of light- and dark-stained cells were observed in the cortex. No distinct neuronal types were identified in the lamina representing the vertical and horizontal migration of neuroblasts during development. The outermost lamina (a) was thin and uniform throughout, while lamina (b), (c) and (d-e) were alternately dark- and light-stained, being thickest in the inferolateral wall and in the parieto-temporal region. Morphometric variations in the cortical wall in 49-50-day old baboon foetuses are similar to those seen in the adult animals and may reflect the later functionally specialized regions of the cerebral cortex.