Aim. Description of the development of the human embryonic brain visualized by transvaginal ultrasound.

Methods. In two studies, healthy pregnant women without any pregnancy complications and normal outcomes were examined by transvaginal ultrasound in the early pregnancy between seven and twelve weeks of gestation. The hypoechogenic brain cavities were described and measured.

Results. Initially, the rhombencephalic cavity was the largest brain cavity. It did not increase its size significantly during the first trimester. The mesencephalic cavity was rather large throughout the first trimester. The dimension of the future third ventricle decreased gradually. The hemispheres were the smallest cavities at the beginning of week seven. They grew fast and dominated the appearance of the embryonic brain from the week nine onwards.

Conclusion. Size and shape of the brain structures showed fast changes during the observation period. The ultrasound description of the brain development corresponded to that of classical embryology.

Key words: brain; central nervous system; cerebral ventricles; embryo; image analysis, computer-assisted; mesencephalon; rhombencephalon; ultrasonography

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