



Visual mnemonics aiming recognition of normal and abnormal structures of the anterior complex

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Objective

Visual mnemonics are helpful instructional tools and aid in pattern recognition of normal and abnormal structures. Cagneaux and Gibault have proposed the visual mnemonic of the “anchor” to help sonologists identify the normal structures of the anterior complex. However, the “anchor” mnemonic identifies only the interhemispheric fissure and callosal sulcus/corpus callosum fibers. In identifying the complete anterior complex, relationship between the lateral ventricles and the CSP should also be evaluated. It is especially important to assess the continuity of the medial wall of the lateral ventricle to the CSP in the BPD and coronal views as this is always present in normal mid-trimester scans and always absent in ACC cases. In addition, demonstrating a separation between the anterior horns and the CSP in coronal views will exclude A-CSP/SOD.

Methods

The anterior complex, which includes the cavum septum pellucidum (CSP), anterior horns, corpus callosum, interhemispheric fissure and callosal sulcus should be evaluated during second trimester ultrasound as a screening test for excluding serious fetal brain abnormalities. In our experience, these structures and the relationships between them are sometimes difficult for some sonologists to confidently evaluate. It is especially important to evaluate these structures thoroughly since cases of agenesis of the corpus callosum (ACC) in the mid-trimester may not demonstrate ventriculomegaly or colpocephaly and recognizing agenesis of the cavum septum pellucidum/septooptic dysplasia (A-CSP/SOD) requires visualization of leaves of the septum pellucidum which results in separation of the CSP and anterior horns on coronal views. Thinking of the CSP and associated structures as an animal ornament may be a useful aid to remember these relationships at the time of the anatomic survey in the midtrimester. The CSP can be seen as the face of an animal and the anterior horns as overly large ears, which abut the superior portion of the cavum. This configuration reminds us that the medial wall of each ventricle (the ear) runs toward the CSP, but is separated from the cavum by the borders of the face. This relationship between the anterior horns and the CSP holds in both the BPD (Figure 1 a, b) and coronal planes (Figure 2 a, b). If we wish to be reminded that the interhemispheric fissure and the callosal sulcus should be evaluated as well (“anchor” sign), we can imagine the animal head as an ornament, which dangles from a string (interhemispheric fissure), attached to the callosal sulcus, which can be identified in the midtrimester, and the animal wearing a hat, which are the fibers of the corpus callosum. We present a visual cartoon of an “animal ornament”, an animal head dangling from a string, which can be identified in both axial and coronal planes of the fetal head. We also present variations from the normal in cases of agenesis of the corpus callosum in the mid trimester, and agenesis of the cavum septum pellucidum/septo optic dysplasia, and demonstrate that the normal “animal ornament” structures are not seen.

Results

We will present a series of images, with and without the superimposed cartoon, of normal midtrimester brains, and fetal brains demonstrating ACC and A-CSP/SOD to show that obtaining the normal cartoon image is not possible.

Conclusion

We hope that this animal ornament cartoon is a useful mnemonic for some, and aids in the learning of the important landmarks of the entire anterior complex.