CORRESPONDENCE

Comment on the paper 'Spina bifida in a 13-week fetus with a normal intracranial translucency' published in *Prenatal Diagnosis* by Arigita *et al.* 2011

We read with interest the report of.[1] The fact that the lumbosacral *spina bifida* was detected by directly visualizing the spine at 13 weeks in a low-risk patient shows high quality of scanning in the ultrasound unit reporting. Unfortunately, in most centers, performing 11–13-week screening, open *spina bifida* (OSB) is not usually detected at this early stage [2,3] but at the second trimester scan where the indirect cranial signs including 'lemon' and 'banana' signs are evident. To improve the detection of OSB in early gestation, we have recently focused our efforts on the demonstration of indirect signs that can be detected at 11–13 weeks.[4–9]

We have reported that in fetuses with OSB, there are abnormalities in the posterior brain and these are easily detectable in the same midsagittal view of the head as routinely used in first trimester screening for aneuploidies by measurement of fetal nuchal translucency thickness and assessment of the nasal bone.[4] These abnormalities include obliteration of the fourth ventricle and/or cisterna magna with downward and backward displacements of the posterior brain. In this journal, we recently reported that there is, in addition, an increase in the diameter of the brain stem (BS), a decrease in the distance between the brain stem and occipital bone (BSOB), which contains the fourth ventricle and cisterna magna, and the BS to BSOB ratio is increased to more than 1.[7]

Arigita *et al.* described a case of OSB with an apparently normal fourth ventricle. We agree that, in some cases of OSB, there is some fluid in the fourth ventricle,[8,9] but this does not correspond to a normal finding; the figure in their article does show that the posterior border of the intracranial translucency is the occipital bone rather than the floating choroid plexus of the fourth ventricle. Careful analysis of their figure confirms our observations that, in OSB, the posterior brain is abnormal: the diameter of the BS is increased, the choroid plexus of the fourth ventricle is not clearly visible, and the cisterna magna is obliterated. Consequently, the BS to BSOB ratio is increased to more than 1. The authors of the article were probably not aware

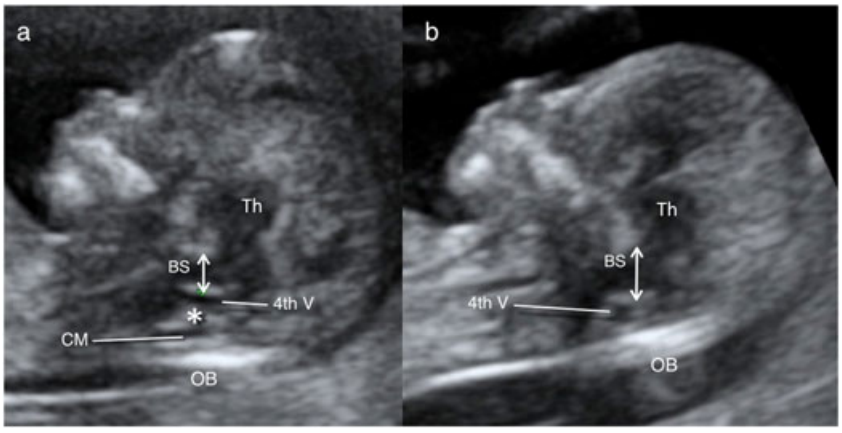

Figure 1 Comparison of the posterior brain in a fetus with a closed spine (left) and in open *spina bifida* (right). The typical landmarks of normality are a brain stem (BS) with a diameter (arrow), which is shorter than the distance of BS to occipital bone (OB). The intracranial translucency as the fourth ventricle (4th V) is an anechoic stripe with two echogenic borders. The posterior border (asterisk), which is the choroid plexus of the fourth ventricle, can be clearly identified and is separated from the OB by the fluid of the future cisterna magna (CM). In open *spina bifida* (Right), there is a posterior and downward shifting of the posterior brain as early sign of Chiari II malformation expressed by a thickened BS with a shortening of the distance of BS to OB. A fluid in the fourth ventricle can still be recognized in some cases, but no typical landmarks are found, as no normal choroid plexus and no fluid in the future cisterna magna

about the study that we published in this journal[7] when they submitted their case and therefore we felt appropriate to explain the subtle changes observed in the posterior brain in fetuses with OSB. In the figure of the autopsy presented in their article, we think the 'star' is not placed on the presumed fourth ventricle but on the BS transition to the myelenencephalon.

We include two figures (Figure 1a and b) showing a midsagittal view of a normal posterior brain and a brain of a fetus with *spina bifida* similar to the case of Arigita, in order to demonstrate the differences in findings.

Even if the development of the Arnold–Chiari-II malformation begins in the embryo,[10] we have observed that the findings in the posterior fossa at 11–13 weeks in the midsagittal view may show a slightly different appearance. However, in all cases, there was evidence of a posterior and downward shifting of the BS and compression of the fourth ventricle, choroid plexus of the fourth ventricle, and the future cisterna magna, to a greater or lesser degree. We are aware that there may be some cases with a normal appearing posterior brain as a false negative finding, but in our opinion, the case reported by Arigita *et al.* shows an abnormal posterior brain as an indirect sign of OSB.

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