Letters to the Editor

Three-dimensional ultrasonographic evaluation of ovarian tumours

Dear Sir,

We read with great interest the recent article (Hata et al., 1999). Their report concerning a preliminary study on three-dimensional (3D) ultrasound examination of ovarian lesions was questionable. A total of 20 tumours were analysed by two different ultrasound examiners; one, who did the conventional two-dimensional (2D) examination and another who recorded the 3D ultrasonographic images. We would like to make the following comments.

Firstly, the 2D ultrasonographic diagnosis of malignancy was done using the scoring system by Sassone et al. (1991). This may be the most useful standard scoring system for 2D imaging, but it is plagued by the existence of complex and high scoring lesions that are associated with benign lesions, such as teratomas, as the authors mention in their discussion. Most teratomas can be identified by their typical morphological appearance. Excluding this type of tumour from evaluation enhances specificity and positive predictive value of any score. This preliminary study only included 20 tumours, and five of them were teratomas. Therefore, we also think that the specificity using Sassone’s 2D scoring system is only 38.4%. However, inversely, our 3D scoring system showed a high specificity (92.3%), even if the number of ovarian tumour was small and five out of 20 tumours were an evident population study bias that excludes a credible result should be published.

Secondly, the authors mention that they could not use the same scoring system for both the 2D and the 3D images. This is astonishing since the diagnostic criteria used for 3D imaging are just the same as those that are normally used for 2D imaging. It should be pointed out on the basis of physics alone, that 3D ultrasound does not show any more information than 2D equipment. The software of the system only replaces the process of assembling 2D sectional planes in the brain of the investigator.

Thirdly, the case mentioned above is especially true for 3D systems as used by Hata et al. (1999) which, to date, lacks planar data and rotation. Assuming that recent technical progress of another commercially available 3D system is incorrect, the system used by Hata et al. has advantages over multi-planar 3D technology for surface rendering is the only possible way of imaging for the 3D system used by the authors. However, additional ways of imaging for the system can be achieved by using multi-planar 3D and volume rendering technology.

Finally, we are in accord that 3D ultrasound technology is beneficial in some applications of obstetrics and gynaecology, but Hata et al. obviously support the well-known process of enthusiasm that will eminently be followed by disillusionment as it is exemplified through gynaecological Doppler ultrasonography (Rehn et al., 1996).

References


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Dear Sir,

We wish to thank Müller et al. for their comments on our article published in Human Reproduction. As they indicated, the scoring system by Sassone et al. (1991) is plagued by the existence of complex and high scoring lesions that are associated with benign lesions, e.g. teratomas. In this study, five out of 20 tumours were teratomas. Therefore, we also think that the specificity using Sassone’s 2D scoring system is only 38.4%. However, inversely, our 3D scoring system showed a high specificity (92.3%), even if the number of ovarian tumour was small and five out of 20 tumours were...
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teratomas. Consequently, our 3D scoring system could be used in any number of subjects with ovarian tumours, and gives a more exact diagnosis of malignancy.

We have a different concept from that of Muller et al., as 3D images are completely different experiences from 2D images. A 2D image is only a single slice of the tumour. However, a 3D image is a sculpture-like one we never experienced before. Certainly, the terms of diagnostic criteria for 3D imaging are the same as those used for 2D imaging, but their meanings are completely different.

Planar images consist of three orthogonal images representing the $x$, $y$, and $z$ planes. Although the reoriented planar images for 3D sonographic data showed intratumoural structures more reliably than did 2D sonography (Pretorius et al., 1995; Mueller et al., 1996), each orthogonal image from the volume is still a planar image similar to conventional 2D imaging (Hata et al., 1998). Although another commercially available 3D system viewed both planar and rendered images simultaneously, the images could be rotated using an interactive display. The rotation of the volume and structures within it may allow more structures to be visualized. Our 3D sonography used in the study discussed would not be applicable to all ovarian tumours, mainly on account of limited viewing direction, but ovarian 3D images can be obtained by procedures far simpler than conventional 3D sonography (Baba et al., 1996).

We do not agree with Muller et al. that 3D sonography should provide a novel experience for us in the obstetric and gynaecological fields. We have to investigate further, whether 3D sonography has a useful application in obstetrics and gynaecology.

References

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