

Mirror artifact in obstetric ultrasound, an infrequent finding.

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Objective

Almost all ultrasound images contain artifacts. Many are not recognized because they contribute to background noise, but others alter the signal and are easily recognizable in the image. Its identification allows improve image quality or prevent a false diagnosis. In the present report, we describe a mirror artifact, one of the paths of sound-related artifacts.

Methods

This is a case report.

Results

A 19⁺⁴ weeks pregnant woman comes to our Service to perform a prenatal diagnostic ultrasound, following the protocols established by the Sociedad Española de Ginecología y Obstetricia (SEGO). The ultrasound examination performed in the first trimester of pregnancy had been completely normal, dating the gestation by the measurement of the crown-rump length made in that exploration. Transabdominal ultrasound revealed an intrauterine pregnancy with fetal biometry according to gestational age and normal fetal anatomy. At certain moments of the scan, depending on the incidence angle of the ultrasound in the abdominal wall, an image suggesting the presence of an extrauterine gestational sac located laterally and behind the uterus containing fetal parts was noted. The image of this second fetus does not present the definition obtained for the first one, being impossible to assess its anatomy adequately. The movements of what looked like a second extrauterine fetus were synchronous with those of the intrauterine fetus, involving the same limbs, but in the opposite direction.

Given these findings, the diagnostic possibilities that could be considered at first sight were twin pregnancy with two amniotic sacs or abdominal ectopic/heterotopic pregnancy. The existence of a thick zone of separation between both possible gestational sacs, with a hyper-reflective line inside, accompanied by the synchrony of movements of both fetuses, made us suspect the presence of a mirror artifact. This was confirmed in subsequent scans, in which a single fetus was visualized, and after the delivery of a normal newborn.

Conclusion

A mirror image artifact is created when the primary beam encounters a highly reflective surface that acts like a mirror. The waves bounce between the mirroring interface and the reflective object, and ultimately return to the transducer. The result is artifactually inverted projection of the reflectors deeper to the surface of the mirror, which is visualized as a real structure.

Mirror image artifact is commonly seen in the liver leading to duplication of hepatic structures caused when the diaphragm acts as a strong reflector. It has been reported in vascular, abdominal, cardiac, and musculoskeletal ultrasound, but is very uncommon in obstetric ultrasound, having been published, to the best of our knowledge, exclusively on four occasions (three of them in early pregnancies). In these cases, the psoas muscle acts as a reflective surface when the bladder is over distended and the uterus is pushed up into the abdomen. At more advanced gestational age, as in our case, the reflective surface is caused by the presence of gas and fluid in the bowel.

Ultrasound artifacts are created by the machine's interpretation of returning echoes but do not correspond to the actual anatomy of the patient. These artifacts are often misleading and result in misdiagnosis. Physicians must be cognizant of mirror artifact to avoid a false positive misdiagnosis of heterotopic or twin pregnancy. Once identified, can be decreased or eliminated by moving the transducer to center it on the region of interest and/or placing the focal zone at the level of interest in the real structure.

