

Case Report

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Ring of fire sign: A pathognomonic sign of corpus luteum cyst

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Discussion

The corpus luteum results from the transformation of the DE GRAAF follicle during ovulation after the expulsion of the oocyte, its main role is the secretion of progesterone and the maintenance of pregnancy if it has taken place. It disappears towards the 3rd month of pregnancy when the placenta obtains autonomy. In the case of the absence of implantation, the corpus luteum collapses and then disappears in 14 days, thus causing a decrease in the level of progesterone and the start of a new menstrual cycle [1].

The founding of an adnexal mass is showed to have a high specificity for the diagnosis of Ectopic Pregnancy (EP). Even more specific if the patient has a positive Beta HCG positive result on the pregnancy serum analysis. However, the main mimicker of this urgent gynaecological pathology is a Corpus Luteum Cystic (CLC) in its exophytic forms in pregnancy such as in our case. In the context of emergency, a predicament may arise: how can we differentiate the two entities using ultrasound before the pregnancy tests weight in to tilt the diagnosis for one and against the other? Especially that "the ring fire sign" on Doppler ultrasound is high specific to both [2]. An article written by Atri Mustapha et al. suggested the use of pulsed Doppler to help differentiate EP from a CLC of pregnancy because of

the presence of a higher-velocity, lower-impedance flow in the EP. He compared multiple series suggesting multiple RI cut-off values. The values seem to overlap between the RIs of EPs and CLCs reported in those series, although, in general, EPs show lower RIs. In his cohort study, he found that the resistive index for ectopic pregnancies ranged from 0.15 to 1.6, with an average value of 0.61 ± 0.24 . In contrast, corpus luteum cysts had a resistive index ranging from 0.39 to 0.7, with an average value of 0.52 ± 0.10 . There was a significant statistical difference between the two groups ($P=.003$). In other words, an RI less than 0,39 has a specificity and positive predictive value of 100% for diagnosing EP and an RI greater than 0,7 had a specificity and positive predictive value of 100% for diagnosing ectopic pregnancy [3].

Overall, The ring fire sign is high specific of EP and CLC, it corresponds to a hypoechoic ovarian mass fostering a cystic central portion with a typical circular Doppler signal "Ring of fire sign" in color mode depicting an intense neovascularization. On pulsed mode, both low and high resistive indices can be used to differentiate between ectopic pregnancy and corpus luteum cyst in pregnancy.

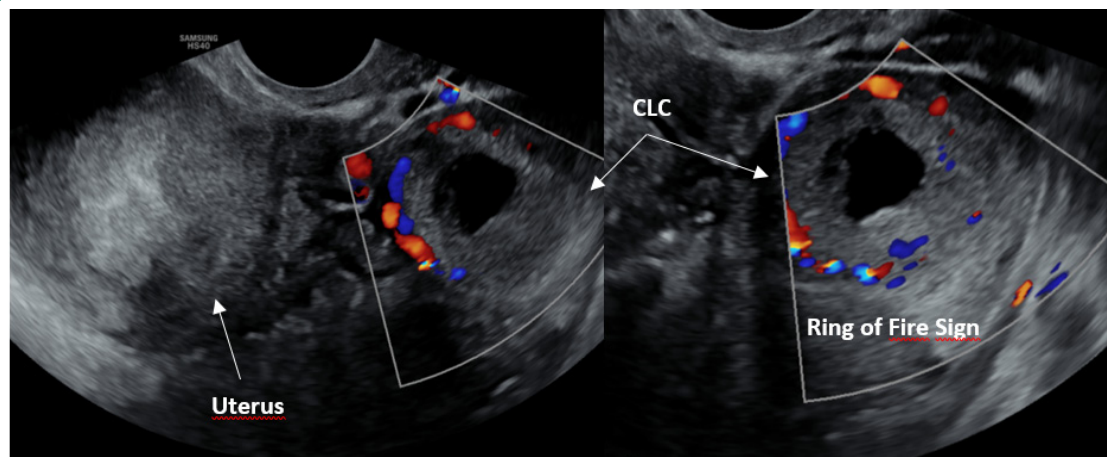


Figure 1: A 35-year-old pregnant female with a medical history of infertility of unknown cause presented at three weeks and three days of gestation, with several days of scant vaginal bleeding and mild pelvic pain. Initial physical exam was normal. Color flow Doppler ultrasound was ordered and revealed the pathognomonic “Ring of Fire” surrounding an Adnexal hypoechoic mass containing a cystic centered portion with peripheral neovascularization.

References

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