Unruptured ectopic pregnancy - CT findings
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Section: Genital (female) imaging
Area of Interest: Genital / Reproductive system female
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Acute AIDS Case Type: Clinical Cases
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Patient: 32 years, female

Clinical History:

32-year-old female patient had a medical abortion at 34 days of gestation. Prior to medical abortion, she did not undergo ultrasonography. Since then, she complained of persistent vaginal bleeding for 2 weeks and lower abdominal pain. CT of the abdomen was advised to rule out pelvic pathology.

Imaging Findings:

Plain and contrast enhanced CT of the abdomen in portal venous phase showed an intensely and peripherally enhancing lesion in the left adnexal region measuring 26 x 23 mm [Fig. 1, 2]. Transabdominal ultrasound showed a round thick-walled hyperechoic lesion in the left adnexa with significant peripheral vascularity [Fig. 3]. No live embryo was noted within. Both ovaries were seen separately from the adnexal lesion. No evidence of free fluid or haemoperitoneum. Uterus was normal. Rest of the abdominal organs appeared normal.

Discussion:

Ectopic pregnancy is one of the causes of acute abdomen in women of childbearing age (15-44 years) [1]. It usually occurs in isthmic or ampullary portion of fallopian tube (95-98%) and less often in interstitial portion (2-4 %) [1, 2]. The common risk factors of ectopic pregnancy are previous tubal surgery, infertility treatment, tubal inflammation or past history of ectopic pregnancy [3, 4].

The classic triad of ectopic pregnancy is abdominal pain, vaginal bleeding and adnexal mass. It is usually suspected in patients with positive urine pregnancy test (UPT) who complain of abdominal pain and bleeding. Ultrasound (US) in such patients reveals an adnexal mass showing echogenic rim and "ring of fire" appearance on colour Doppler. Additional findings include free fluid or haemoperitoneum. Pathologically, the tubal ring corresponds to concentric trophoblastic tissue surrounding the chorionic sac and the "ring of fire" as increased flow within the trophoblastic tissue [1, 3, 5, 6, 7].

Transvaginal ultrasound remains the imaging modality of choice for suspected ectopic pregnancy. There are few case reports in the literature referring on the CT findings of ectopic pregnancy [2, 3, 7, 8]. In case of unruptured ectopic, CT shows an intensely enhancing ring lesion in adnexal region which corresponds to the "ring of fire" appearance in US [8]. In ruptured ectopic, usually a heterogeneous enhancing mass in adnexal region with associated haemoperitoneum is seen. Similar CT findings can occur in other lesions like corpus luteal cyst and tubo-ovarian abscess. But these can be differentiated from ectopic pregnancy by their clinical presentation and serum beta HCG levels (human chorionic gonadotropin).

In our case as ectopic pregnancy was not suspected initially, CT was advised which showed an intensely enhancing
ring lesion in left adnexa region. The serum b-HCG level was elevated (1800 IU /ml). Following a strong suspicion of ectopic pregnancy, emergency laparotomy was performed. Unruptured tubal pregnancy was confirmed and resected.

Although CT is not the initial modality of choice in cases of suspected ectopic pregnancy, the presence of intensely enhancing ring lesion in adnexal region in combination with clinical features may be suggestive for the diagnosis of ectopic gestation in unsuspected cases.

Differential Diagnosis List: Unruptured tubal ectopic gestation, Tubo-ovarian abscess, corpus luteal cyst, Adnexal malignancy

Final Diagnosis: Unruptured tubal ectopic gestation

References:

Description: Plain axial CT of abdomen shows an isodense and lobulated mass lesion in left adnexal region (yellow arrow). Origin: Chary D, Department of Radiology, VRR Scan & Diagnostics, Chennai, India
Description: Contrast axial CT shows an intensely and peripherally enhancing mass lesion in left adnexal region (yellow arrow). Origin: Chary D, Department of Radiology, VRR Scan & Diagnostics, Chennai, India
**Description:** Coronal CT reformation shows same findings as in figure 2a (yellow arrow). **Origin:** Chary D, Department of Radiology, VRR Scan & Diagnostics, Chennai, India
Figure 3

Description: A round lesion with hyperechoic thick wall noted in left adnexal region suggestive of ectopic gestational sac. No live embryo is noted within. Origin: Chary D, Department of Radiology, VRR Scan & Diagnostics, Chennai, India.
Description: Colour Doppler shows increased peripheral vascularity surrounding the sac. Origin: Chary D, Department of Radiology, VRR Scan & Diagnostics, Chennai, India.