Case 11873

Tubo-ovarian abscess
Published on 12.08.2014

DOI: 10.1594/EURORAD/CASE.11873
ISSN: 1563-4086
Section: Genital (female) imaging
Area of Interest: Genital / Reproductive system female
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: Ultrasound
Imaging Technique: Ultrasound-Colour Doppler
Special Focus: Abscess Case Type: Clinical Cases
Authors: Christiane Nyhsen, Alvin Karsandas, Roland Koerner
Patient: 47 years, female

Clinical History:
A 47-year-old lady with no significant past medical history other than previous Mirena intra-uterine device (IUD) insertion presented to the emergency department with a one week history of severe suprapubic and left iliac fossa pain. The patient was pyrexial (38.2°C) and had raised inflammatory markers (WCC=15.1, CRP=260).

Imaging Findings:
Contrast-enhanced CT abdomen/pelvis in portal venous phase identified a 7cm multi-located collection in the left iliac fossa with wall thickening of adjacent bowel loops and a little free fluid. The left ovary was not seen separately. This was reported as an abscess, either tubo-ovarian or diverticular in origin. The patient was treated with high dose intra-venous antibiotics, but failed to show any improvement in pain or pyrexia after 4 days. A trans-vaginal ultrasound examination was performed, which showed a persistent complex collection involving the left ovary with some wall thickening of closely related sigmoid colon. The intra-uterine coil was noted in satisfactory position. Subsequent laparoscopic surgery revealed a tubo-ovarian abscess with no evidence of diverticulitis but secondary inflammatory reaction of adjacent bowel loops. Coil removal, abscess drainage and prolonged antibiotic therapy resulted in eventual clearance of the infection. Follow-up ultrasound 7 months after treatment confirmed full recovery.

Discussion:
Patients with tubo-ovarian abscesses (TOA) generally present with lower abdominal pain, fever, raised inflammatory markers, possibly a pelvic mass or PV discharge. Chronic cases may be less painful with almost normal inflammatory markers.

Depending on presenting symptoms/specialty reviewing the patient (Surgery or Gynaecology), a pelvic ultrasound or CT is performed.

Ultrasound appearances of a TOA are variable ranging from solid to cystic, are often complex. TOAs are a complication of pelvic inflammatory disease (PID), mostly caused by polymicrobial infection, not sexually transmitted pathogens. Early ultrasound findings in PID include ill-defined uterine outline and loss of clear midline stripe [1].

On CT TOA usually appear complex displaying multi-loculated cystic adnexal areas with uniformly thickened enhancing septations. Further primary TOAs findings are a thickened mesosalpinx, which is displaced anteriorly; an associated pyosalpinx with fluid-filled tubular structures and enhancing walls closely related to the TOA or (if
extending posteriorly) a thickened uterosacral ligament [1].

Wall thickening of adjacent bowel loops can be seen on ultrasound or CT. Gas within a primary TOA is uncommon and should raise suspicion of fistulation to colon or a secondary TOA due to complicated diverticulitis/appendicitis. Other complications include secondary involvement of the ureter/urinary bladder with upper renal tract obstruction and spread of infection to the right upper quadrant with perihepatitis/cholecystitis (Fitz-Hugh-Curtis Syndrome) [2].

TOAs have been reported in association with intra-uterine contraceptive devices (IUD) [2-4]. An increasing risk in long-term use (over 2-5 years) is reported [5, 6]. They may also occur after removal of IUD [6, 7]. IUD are often colonized with Actinomycetes species and other normal vaginal bacteria, usually not causing an invasive infection.

Imaging findings suggestive of actinomyces infection include predominance of solid mass–like inflammatory areas with intense contrast enhancement on CT due to chronically progressive fibrosis which may lead to a “frozen pelvis” [6]. Appearances may show aggressive infiltration of surrounding organs mimicking malignancy.

In cases of TOA with IUD in situ it is important to raise suspicion of a primary TOA and recommendations should include prompt IUD removal, sending IUD for culture (including Actinomycetes, which need longer cultures), surgical drainage and of course antibiotic therapy (of several months length in cases of Actinomycosis). If not diagnosed promptly and treated aggressively, TOA can rupture resulting in peritonitis, fulminant sepsis and death.

Actinomycetes were not grown in this case but the TOA was thought likely related to prolonged IUD presence.

**Differential Diagnosis List:** Complex tubo-ovarian abscess likely secondary to prolonged intra-uterine device presence, Abscess caused by diverticulitis with secondary involvement of tubes/ovaries, Other benign or malignant ovarian tumour

**Final Diagnosis:** Complex tubo-ovarian abscess likely secondary to prolonged intra-uterine device presence

**References:**


Figure 1

Description: Left tubo-ovarian abscess with thickened enhancing walls as outlined by arrows. Origin: Department of Radiology, City Hospitals Sunderland, UK
Description: Left tubo-ovarian abscess with thickened enhancing walls as outlined by arrows. Origin: Department of Radiology, City Hospitals Sunderland, UK
Description: Left tubo-ovarian abscess as outlined by arrows, closely related to uterus (ut). A loop of ileum with secondary inflammation containing a locule of gas is seen in the region of the right adnexa. Origin: Department of Radiology, City Hospitals Sunderland, UK
**Description:** Left tubo-ovarian abscess as outlined by arrows, closely related to uterus (ut). A loop of ileum with secondary inflammation containing a locule of gas is seen in the region of the right adnexa. **Origin:** Department of Radiology, City Hospitals Sunderland, UK
Description: Inferior aspect of left tubo-ovarian abscess with thickened enhancing walls, very closely related to uterus (ut). Origin: Department of Radiology, City Hospitals Sunderland, UK
Description: Intra-uterine device in situ (see arrow). Origin: Department of Radiology, City Hospitals Sunderland, UK
Description: Intra-uterine device in situ (see arrow). Origin: Department of Radiology, City Hospitals Sunderland, UK
Description: Left pelvic complex collection visualised immediately adjacent uterus with IUD in situ (arrow). Origin: Radiology Department Sunderland Royal Hospital, UK
Description: Multiloculated left pelvic collection with thickened enhancing walls (arrows) immediately adjacent to uterus with IUD in situ. Origin: Radiology Department Sunderland Royal Hospital, UK
Description: Multiloculated left pelvic collection (arrows) immediately adjacent to uterus with IUD in situ. Secondary inflammatory changes of a loop of ileum on the right (white arrow). Origin: Radiology Department Sunderland Royal Hospital, UK
Description: Multiloculated left pelvic collection (arrows).
Secondary inflammatory changes of a loop of ileum on the right (white arrow).
Secondary mild left hydronephrosis. Origin: Radiology Department Sunderland Royal Hospital, UK
Figure 3

Description: Anteverted uterus with intra-uterine device in situ (IUD). Loss of clear margins of uterus with complex pelvic collection abutting uterus postero-laterally on the left. Origin: Radiology Department Sunderland Royal Hospital, UK
Description: Complex left tubo-ovarian abscess with thickened septations and some fluid pockets. The left ovary was not identified separately. Origin: Radiology Department Sunderland Royal Hospital, UK.
Description: Complex left tubo-ovarian abscess with thickened septations and some fluid pockets. The left ovary was not identified separately. Origin: Radiology Department Sunderland Royal Hospital, UK
**Description:** Complex left tubo-ovarian abscess with thickened septations and some fluid pockets. The left ovary was not identified separately. **Origin:** Radiology Department Sunderland Royal Hospital, UK
Description: Complex left tubo-ovarian abscess with increased vascularity on colour Doppler. The left ovary was not identified separately. Origin: Radiology Department Sunderland Royal Hospital, UK