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Reference Article: Ovarian torsion: Case–control study comparing the sensitivity and specificity of ultrasonography and computed tomography for diagnosis in the emergency department. Swenson, David W. et al. European Journal of Radiology, Volume 83, Issue 4 , 733 - 738

Objective: Evaluate the sensitivity and specificity of pelvic ultrasound (US) and CT Abdomen/Pelvis for the identification of ovarian torsion in women presenting to the ED with acute lower abdominal or pelvic pain.

Background: Ovarian torsion is not only a rare diagnosis (1 in 40 or 2.7% of gynecologic emergencies) but it is also a difficult one to make. It is almost as common as testicular torsion but we are much better at diagnosing testicular torsion. Additionally, after diagnosis of ovarian torsion is made, we (ED physicians as a whole) are slower at getting the patient to the OR for treatment. Despite ultrasound being the diagnostic test of choice for ovarian torsion, some advocate CT imaging.

Method/Patient Selection: This is a retrospective case-control study, coordinated at Rhode Island Hospital, which compared findings on ultrasound (US) and CT imaging in 20 adult females presenting to two centers with acute lower abdominal or pelvic pain in whom ovarian torsion was ultimately diagnosed and 20 randomly selected age-matched controls with acute lower abdominal or pelvic pain with other diagnoses. Imaging studies were retrospectively evaluated by an attending radiologist and a third-year radiology resident, both blinded to clinical data. The data was interpreted as (1) demonstrating an abnormal ovary or not, and (2) suggestive of torsion or not. Sensitivity, specificity and interobserver variation were calculated for each imaging modality.

Results/Discussion: Pelvic US was interpreted as demonstrating an abnormal ovary in 90.0% of ovarian torsion cases by reader 1, and in 100.0% by reader 2, whereas CT was interpreted as revealing an abnormal ovary in 100.0% of torsion cases by both readers. Pelvic US for ovarian torsion was 80.0% sensitive (95% CI, 58.4–91.9%) and 95.0% specific (95% CI, 76.4–99.1%) for reader 1, while 80.0% sensitive (95% CI, 58.4–91.9%) and 85.0% specific (95% CI, 64.0–95.0%) for reader 2. Interobserver agreement for pelvic US was fair (Kappa = 0.60). CT Abdomen/Pelvis for ovarian torsion was 100.0% sensitive (95% CI, 83.9–100.0%) and 85.0% specific (95% CI, 64.0–94.5%) for reader 1, while 90.0% sensitive (95% CI, 69.9–97.2%) and 90.0% specific (95% CI, 69.9–97.2%) for reader 2. Interobserver agreement was excellent (Kappa = 0.85).

Imaging Modality	Reader 1			Reader 2		
Ultrasound	90% correct	Sens: 80%	Spec: 95%	100% correct	Sens: 80%	Spec: 85%
CT Abdomen / Pelvis	100% correct	Sens: 100%	Spec: 85%	100% correct	Sens: 90%	Spec: 90%

Reader 1 = Radiology Attending; Reader 2 = Radiology Resident

Limitations: The study does not mention what the diagnosis was in the control population. It is a very small sample size with only 20 subjects. The two radiologists reading the studies were an attending radiologist (reader 1) and a 3rd year radiology resident (reader 2).

Bottom Line: The diagnostic performance of CT is not shown to be significantly different from that of US in identifying ovarian torsion in this study. These results suggest that when CT demonstrates findings of ovarian torsion, the performance of another imaging exam (i.e. US) that delays therapy is unlikely to improve preoperative diagnostic yield.