



Gynecological and obstetrical etiologies of hemoperitoneum in young female patients

Poster No.: C-12401

Congress: ECR25

Authorblock: R. Abdellaoui Andaloussi Maane, D. Danthine; Liège/BE

Disclosures:

Rayan Abdellaoui Andaloussi Maane: Nothing to disclose

Denis Danthine: Nothing to disclose

Keywords: Contrast agents, Emergency, Pelvis, CT, CT-Angiography, Contrast agent-intravenous, Education and training, Haemorrhage

Any information contained in this PDF file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is strictly prohibited. You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

Purpose or Learning Objective:

Hemoperitoneum is a rare cause of consultation in the emergency room. It affects mostly young female patients. We reviewed the different gynecological and obstetrical etiologies of hemoperitoneum in young female patient.

Methods or Background:

We reviewed all the cases labelled hemoperitoneum in our Picture Archiving and Communication System and found different etiologies of hemoperitoneum in young female patients. The systematic review of the literature permitted us to complete our poster and pictorial review.

Results or Findings:

Hemoperitoneum is a rare cause of emergency room (ER) consultations. Its prevalence and sex ratio have only been studied once in the literature, based on data from four city-based hospitals in the USA over four years. This study demonstrated that spontaneous hemoperitoneum primarily affects women, with a sex ratio of 3:1 {1}.

Since clinical signs are not specific, imaging techniques are crucial for diagnosing hemoperitoneum. The causes of hemoperitoneum are diverse and can be gynecological, iatrogenic, tumoral, infectious, vascular, or digestive in origin.

In young female patients (<35 years old (YO)) {1}, the main etiology is overwhelmingly gynecological. This poster presents a pictorial review of different gynecological and obstetrical etiologies of hemoperitoneum in this population.

2 - Clinical Cases

1) Functional - Ovarian Cyst Rupture

The most common cause of hemoperitoneum in women under 35 YO is ovarian cyst rupture.

We report the case of a 24-year-old woman who visited the ER with lower abdominal pain and nausea. Clinical examination and blood tests were normal.

An abdominal and pelvic sonography (Fig. 1A) revealed a poorly defined juxta-uterine pelvic mass with heterogeneous echotexture, along with fluid accumulation in the perihepatic and perisplenic regions.

To refine the diagnosis, a contrast-enhanced CT scan (CECT) was performed (Fig. 1B), revealing a juxta-uterine cystic lesion with enhanced walls surrounded by a mixed densities (30 – 70 HU) collection. This CT presentation is typical of an ovarian cyst rupture with a “clot sign.”

2) Ectopic Pregnancy (EP)

EP occurs when a fertilized ovum implants outside the uterine cavity. The most common site of EP is within a fallopian tube (90%) {2} {3}, but ovarian, cervical, and abdominal EPs also occur. Clinically, it presents with various symptoms, typically abdominal pain and gynecological bleeding. Hemorrhage due to vascular proliferation in EP can be life-threatening.

We report a 32 YO patient who presented to the ER with severe abdominal pain, nausea, sweating, and gynecological bleeding. She was still breastfeeding her 13-month-old baby. Blood tests showed decreased hemoglobin levels (11.2 g/dL, N: 11.7-15 g/dL) and hematocrit (31.6%, N: 35.8-45.5%), suggesting bleeding. β -HCG was measured at 3609 UI/L, indicating pregnancy.

CECT (Fig. 2) showed a hypervascularized ill-defined structure in the left adnexa, adjacent to a nodular hypodense structure with enhanced walls (the corpus luteum), associated with a voluminous heterogeneous collection in the Douglas pouch.

The combination of β -HCG, abdominal pain and hemoperitoneum (with ill-defined hypervascularized structure) is highly suggestive of a ruptured EP. EP is the first etiology to exclude due to its potential life-threatening risk.

3) Tumoral Causes

Benign

We did not find any cases of hemorrhagic rupture of a benign tumor lesion in our Picture Archiving and Communication System (PACS). However, a literature review identified some cases {4} {5}, which remain extremely rare. No epidemiological studies exist on this topic. Myomas are the most common cause. Here is an example taken from Wigniolle and al. {4} (Fig. 3).

Malignant

As with benign etiologies, hemoperitoneum secondary to the rupture of a gynecological neoplasm is extremely rare and no epidemiological study has been done. We did not find any cases in our PACS. Here is an example from the literature {6} (Fig. 4).

4) Traumatic

Traumatic vaginal perforation is a rare cause of hemoperitoneum, usually found in women with prior surgical interventions. Post-coital perforation is rare but not a life-threatening condition. Early diagnosis permits a better postoperative outcome {7}.

We report the case of a young patient who presented to the ER with lower abdominal pain and vaginal bleeding two days after consensual sexual intercourse. She reported passing multiple blood clots since then. General clinical examination was normal. Gynecological examination revealed bleeding of unclear origin. Blood tests showed decreased hemoglobin levels (8.2 g/dL, N : 11.7-15 g/dL) and elevated C-reactive protein (CRP) at 88 mg/L (N: <5 mg/L).

A CECT scan was performed to assess the bleeding (Fig. 5), revealing a disruption of the posterior vaginal fornix, pelvic peritoneal effusion with hemorrhagic densities, locoregional fat infiltration, and marked enhancement of the peritoneal layers.

5) Postpartum Hemorrhage

We describe the case of a 23 YO patient who spontaneously presented to the hospital for labor. Her medical history included an ectopic pregnancy and treated hypothyroidism. She delivered vaginally after a dystocic labor requiring vacuum extraction. The next day, an internal emergency call was made as the patient was hypotensive (systolic blood pressure at 50 mmHg). She exhibited diffuse abdominal pain upon palpation, associated with suprapubic guarding but no

external blood loss.

An emergency CECT scan (Fig. 6) revealed a significant hemoperitoneum, predominantly in the pelvis and along the right paracolic gutter associated with uterine vessels hypertrophy. No bleeding was recognised. The patient was taken to the operating room, where a posterior uterine laceration was identified and sutured. Hemodynamic stability was achieved after transfusion of two units of red blood cells.

6) Endometriosis

Hemoperitoneum due to endometriotic implants has only been described during pregnancy {8}. At CHU de Liège, we encountered a 31 YO patient with a history of MRI-diagnosed endometriosis who presented to the ER with acute abdominal pain. Clinical examination demonstrated diffuse abdominal tenderness. Blood tests showed decreased hemoglobin level (10.4 g/dL, N: 11.7-15 g/dL) and hematocrit (31.9%, N: 35.8-45.5%), suggesting bleeding, with no elevation of B-HCG.

CECT scan (Fig. 7) showed a large hemoperitoneum associated with a nodular arterial enhancement in the right parametrium, without extravasation, suggesting a pseudoaneurysm. Comparison with an MRI (Fig. 8) performed eight months earlier revealed a retractile endometriosis lesion in the right parametrium, in proximity to the pseudoaneurysm. The retrospective review revealed a spontaneously hyperintense T1 nodular structure, which could correspond to flow artifacts within the pseudoaneurysm.

After discussion with the gynecological team, our Interventional Radiology team performed uterine angiography (Fig. 9) and successfully embolized the lesion using endovascular glue. The postoperative course was uneventful.

Conclusion:

Hemoperitoneum is a rare cause of consultation in the ER. The most affected population appears to be young women, and among this group, gynecological and obstetrical causes are predominant. Early diagnosis and treatment are essential for the favorable outcome of a hemoperitoneum. CECT scan is the cornerstone to determine the etiology.

References:

1. Scheinfeld, M.H., Schwartz, C., Jain, V.R., et al. (2021). Non-traumatic hemoperitoneum in the ED setting: causes, characteristics, prevalence, and sex differences. *Abdom Radiol*, 46, 441–448.
 2. Millet, I., Pages, E.B., Alili, C., et al. (2014). Hémopéritoine, comment gérer? *Imagerie de la Femme*, 24, 84-91.
 3. Mummert, T., Gnugnoli, D.M. (2023). *Ectopic Pregnancy*. StatPearls Publishing.
 4. Wigniolle, I., et al. (2013). Spontaneous rupture of a uterine myoma. *J Gynecol Obstet Biol Reprod (Paris)*, 42(7), 703-4.
 5. Lotterman, S. (2008). Massive hemoperitoneum due to uterine leiomyoma rupture. *Am J Emerg Med*, 26(8), 974.e1-2.
 6. López-Rubio, M.A., et al. (2015). Spontaneous hemoperitoneum and clear cell tumor of ovary. *Ginecol Obstet Mex*, 83(09), 551-555.
 7. Stabile, G., et al. (2021). Postcoital vaginal perforation. *Int J Environ Res Public Health*, 18(18), 9746.
 8. Lier, M.C.I., et al. (2017). SHIP and endometriosis. *Eur J Obstet Gynecol Reprod Biol*, 219, 57-65.
-

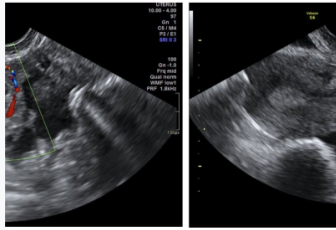


Fig 1: Figure 1. Ovarian Cyst rupture. A/ Endovaginal sonography : Heterogeneous round structure on the right ovary with a peripheral "ring" color Doppler hypersignal Heterogeneous echogenic fluid collection in the pouch of Douglas (yellow line)

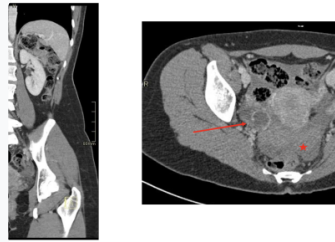


Fig 1: B/ CECT : Right adnexal round structure (red arrow) with peripheral enhancement and posterior wall defect Mixed-density fluid collection (red star) in the pouch of Douglas, comprising liquid (30 HU) and hemorrhagic components (55-70 HU)

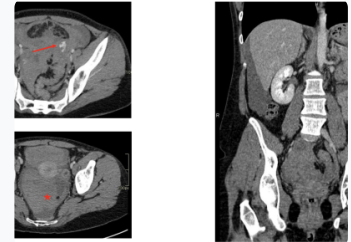


Fig 2: Figure 2. Ectopic Pregnancy (EP) Large peritoneal collection of mixed density (red star), both fluid (20 HU) and hemorrhagic (55-70 HU)

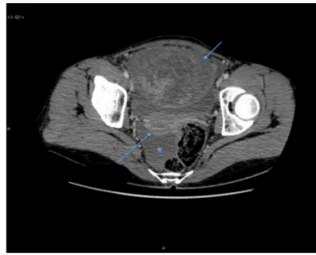


Fig 3: Hypervascularized structure in the left adnexa (red arrow) Coronal view is important to appreciate the volume of the hemoperitoneum which is an important information for the gynecologist.

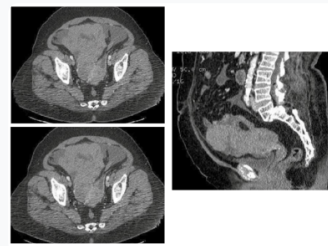


Fig 4: Figure 4. CECT images from {6} showing an enhanced infiltrative pelvic mass of the uterus with a mixed densities pelvic collection.

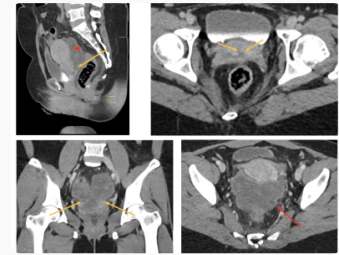


Fig 5: Figure 5. Postcoital Pelvic heterogeneous collection (20-60 HU) filling the recto-uterine space (red star) Parietal defect on the vaginal posterior cul-de-sac without any contrast extravasation (yellow arrows) Enhancement of the peritoneal layers (red arrow)

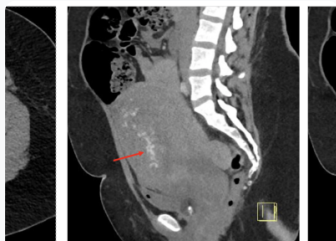


Fig 6: Figure 6. Postpartum hemorrhage Bulky post-partum uterus Peritoneal collection with hemorrhagic density (60 HU) (red star) Hypertrophic uterine vessels (red arrow) without blush

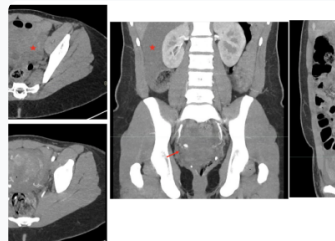


Fig 7: Figure 7. Pseudoaneurysm on endometriosis lesion Peritoneal heterogeneous effusion (red star) with fluid (15-20 HU) and hematic (60 HU) densities Arterial phase shows a pseudoaneurysm (red arrow) on a branch of the right uterine artery

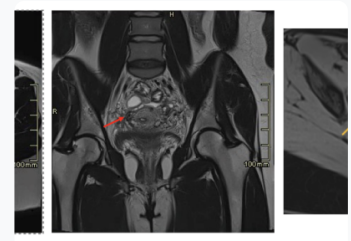


Fig 8: Figure 8. Endometriosis Axial and coronal T2: spiculated lesion of the right mediolateral space (red star), including the parametrium Axial T1 : suspected pseudoaneurysm (yellow arrow)

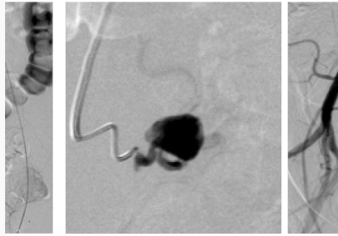


Fig 9: Figure 9. Right uterine artery arteriography Confirmation of the pseudoaneurysm (red arrow) of a branch of the right uterine artery. Selective embolization of the feeding branch using glue, successfully achieving complete occlusion of the vascular lesion.