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Adnexal Lesion with Hemoperitoneum in a Woman of Reproductive Age: Beyond Ectopic Gestation

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Abstract: ***Non traumatic hemoperitoneum can either occur spontaneously or it can be iatrogenic. Presenting complaints of the patients can range from minor abdominal pain to intestinal obstruction. We report one such case of hemoperitoneum occuring in a young female, who was found to have a complex solid cystic adnexal lesion on initial imaging. Based on last menstrual period, urine pregnancy test and imaging findings, the diagnosis of ruptured ectopic pregnancy was ruled out. Further evaluation revealed prosthetic heart valves and history of anti - coagulation therapy for 3years with deranged coagulation profile. The patient was managed conservatively. The anti - coagulation therapy was withheld and fresh frozen plasma was transfused. The clinical condition of patient improved with reduction in the size of adnexal lesion and near complete resolution of fluid from abdomen. This case emphasizes that at times radiologists may be the first set of clinicians to diagnose a hemoperitoneum and exclude the possibility of hemoperitoneum due to anticoagulation in the appropriate clinical setting, so that they can alert their clinical colleagues.***

Keywords: Non traumatic hemoperitoneum, Anticoagulation therapy, Warfarin, Adnexal lesion, Ruptured ectopic pregnancy

1. Introduction

Hemoperitoneum has been broadly classified into traumatic and nontraumatic, on the basis of origin. Nontraumatic hemoperitoneum may develop spontaneously or may have an iatrogenic cause[1]. Surgical interventions including the minimal access surgeries, anticoagulation therapy and blood dyscrasias are amongst the various iatrogenic causes of nontraumatic hemoperitoneum. Anticoagulation therapy is widely prescribed in acute venous thromboembolism, atrial fibrillation and ischemic heart disease with warfarin being the one of the most commonly used drugs[2]. It is also used for prevention of thromboembolic events in patients with prosthetic heart valves. Warfarin is a coumarin derivative and acts by inhibiting vitamin K epoxide reductase enzyme which mediates vitamin K interconversion into its metabolically active form, thus interfering with the activity of vitamin K dependent anticoagulant factors (II, VII, IX, X) and proteins (Protein C and S) [3]. Risk of spontaneous hemorrhage exists with all anticoagulant agents even including the recent ones like fondaparinux and rivaroxaban despite maintenance of normal therapeutic range. Intramuscular hematomas including the rectus muscle and iliopsoas are commonly encountered sites for spontaneous hemorrhage in patients on anticoagulant drugs, while hemoperitoneum is not so common[4]. Clinically, the patients present with non specific abdominal complaints and falling hematocrit. Early imaging in patients with high index of suspicion can be life saving in these patients.

2. Case Report

A 28 year married woman presented to emergency department with complaints of diffuse pain in abdomen for 3days, bleeding per rectum and blood in stools for 1day and nausea with 5 - 6 episodes of vomiting in the last eighteen hours.

On physical examination, the patient was conscious and oriented. She had marked pallor, tachypnea (110 bpm) and hypotension (80/58 mm Hg). Abdomen was distended with mild generalised tenderness all over the abdomen. No signs of guarding and rigidity. Free fluid was present on percussion. Patient also gave history of irregular and heavy menstrual cycles.

On ultrasound examination, gross free fluid with fine internal echoes and sepation was present in abdomen. A heterogeneous solid cystic lesion was seen in left adnexa measuring ~5.9 (AP) x5.7 (Tr) x4.1 (CC) cm showing no central vascularity. Left ovary was not seen separately. Uterus was anteverted, normal in size and morphology. Right ovary was normal. Liver was enlarged (~17.1cm) with perihepatic free fluid. Gall bladder, pancreas, spleen and bilateral kidneys had no evidence of parenchymal injury (Figure 1). In view of haemoperitoneum and left adnexal lesion in a young woman with irregular menstrual cycles, urine pregnancy test was done to rule out ectopic pregnancy, which was negative. An ultrasound guided diagnostic aspiration of the peritoneal free fluid revealed frankly haemorrhagic fluid.

CECT abdomen was performed to look for the exact extent of adnexal lesion and source of hemoperitoneum. Ultrasound findings were confirmed on CT scan, which showed a relatively well defined minimally enhancing solid cystic mass lesion in left adnexa measuring ~5.5 (AP) x5.6 (Tr) x7.5 (CC) cm with an ill defined solid component (mean attenuation ~62HU). No e/o fat attenuation of calcification was seen within the lesion. Left ovary was not seen separately. Uterus, right ovary as well as right adnexa was normal. Moderate free fluid was seen in peritoneal cavity involving perihepatic, perisplenic, bilateral paracolic gutters, sleeves of mesentery and pelvis with mean attenuation ~38HU showing dependent cellular - fluid level (Hematocrit sign). Minimal bilateral pleural effusion was also seen. No site of pooling of oral or IV contrast was noted suggesting no concurrent gastrointestinal cause of hemoperitoneum. On the sections passing through the lower chest, prosthetic heart valves were seen (Figure 2). On enquiring it was revealed that patient had undergone bivalvular (mitral and aortic valves) replacement 3 years ago and was on prophylactic dose of Warfarin 2.5mg, Digoxin 0.25mg and Lasilactone 10mg orally once daily since then. She was following up in a hospital near her home and on her last follow up visit one

month back, INR value was 1.8 and the dose of warfarin was increased to 5mg once daily.

Her haemogram revealed haemoglobin level of 3mg/dl. Prothrombin time was >90 seconds and INR was 5.1.

On the basis of this clinical history and the ultrasound and CT findings of an adnexal mass with hemoperitoneum, a diagnosis of ovarian haemorrhage with rupture into the peritoneal cavity and hemoperitoneum was made. Warfarin administration was withheld and the patient was managed conservatively. Injectable vitamin K was given and 16 units of FFP were administered over a course of 5days which improved her prothromobin time from >90seconds (INR - 5.1) at the time of presentation to 18seconds (INR - 1.7). Haemoglobin level was also increased from 3mg/dl to 10.5mg/dl after administration of 4 units of PCV. The symptoms of the patient were relieved except for mild lower abdominal pain.

After 2 weeks, repeat ultrasound examination revealed reduction in the size and echogenicity the previously seen lesion in left adnexa. The free fluid in pelvis was reduced significantly. No free fluid was seen in subhepatic, perisplenic, bilateral paracolic gutters and in the interbowel region (Figure 3). The patient was well on subsequent follow up.

3. Discussion

Several vitamin K dependent anticoagulation factors (factors II, VII, IX and X) and proteins (Protein C and S) play an important role in blood coagulation cascade. Vitamin K acts as a cofactor in conversion of these factors into their active carboxylated form which in turn renders vitamin K into an oxidised metabolically inactive form. Warfarin mediates its anticoagulant effect by inhibiting the enzyme vitamin K epoxide reductase which catalyzes conversion of oxidised vitamin K into its reduced form[3].

Warfarin is rapidly absorbed from gastrointestinal tract and has high bioavailability. Its toxicity is dose dependent and often manifests as subcutaneous and intramuscular bleed. Development of hemoperitoneum is rather an uncommonly encountered scenerio and may occur either due to direct haemorrhage into the peritoneum or bowel wall haemorrhage with secondary hemoperitoneum. In patients on anticoagulation therapy, cases of hemoperitoneum due to rupture of the gallbladder[5] or spleen[6] have been reported. Rarely, cases of hemoperitoneum with an adnexal lesion have been described in patients on warfarin therapy[7, 8]. Other uncommon presentations like spontaneous spinal subdural hemorrhage[9] and esophageal intramural hematoma mimicing acute coronary syndrome[10] have also been described in patients on anticoagulation therapy. Gastrointestinal bleeding is another severe complication and is reported to occur in 12% cases on warfarin anticoagulation[11] as was seen in our case.

The incidence of nontraumatic hemoperitoneum was found to be greater in women with male to female ratio of 1: 3[12]. Factors commonly implicated in the development of hemorrhages in patients on anticoagulant therapy are advanced age, concurrent medication use, co - morbid diseases (including hypertension, diabetes mellitus, cardiac disease, liver dysfunction, renal insufficiency, cerebrovascular disease and long - term hemodialysis) as well as intensity of the anticoagulant effect and length of therapy[2]. The HAS - BLED score which stands for hypertension, abnormal renal or liver function, stroke, bleeding history or predisposition, labile INR, elderly (> 65 years), drugs/alcohol concomitantly, should be used for estimation of risk of bleeding in patients on anticoagulant therapy. The score of > 3 indicates need for regular clinical review and follow up[13]. Recommended maintenance INR value for patients on anticoagulant therapy for prosthetic valves is between 2.0 and 3.5[14].
Imaging plays an important role in early detection and timely management of these haemorrhagic complications. Ultrasound being widely available is most often the initial investigation modality for detection of intramuscular hematomas and hemoperitoneum. Though, often it is difficult to precisely determine the exact site of bleeding in hemoperitoneum, ultrasound helps by localising the organ system to be further evaluated. As in our case, patient presented with diffuse low grade abdominal pain and gastrointestinal bleeding, initial ultrasound examination helped in detection of hemoperitoneum and pointed towards an adnexal pathology. Considering the age, gender and symptoms of the patient with ultrasound findings, possibility of ruptured adnexal lesion with secondary hemoperitoneum was considered. Ruptured ectopic pregnancy or rupture of an ovarian cyst are the two most common gynecological causes of spontaneous hemoperitoneum in reproductive age group women[15]. Ectopic pregnancy is a particularly important and often the first differential diagnostic consideration and needs to be ruled out with diligence because a delay in diagnosis may be fatal. Last menstrual period, urine pregnancy test and no vascularity on ultrasound examination helped in ruling out ruptured ectopic pregnancy as the cause for hemoperitoneum.

On CT scan, the 'hematocrit sign' defined as the presence of a cellular–fluid level caused by the settling of cellular elements in the dependent portion of a hematoma as was observed in our case, is a highly sensitive (87%) and specific sign of coagulopathic hemorrhage[15]. The 'sentinel clot sign', which is defined as the hematoma having highest attenuation visualised closest to the site of bleeding in a case of hemoperitoneum, commonly used for localisation of bleed site was not found in our case[16]. When coagulopathy - associated active extravasation is detected on contrast enhanced CT, the cause is more often venous than arterial. This usually does not require surgery or embolization and treatment is mainly conservative. Withholding the anticoagulant medications is the mainstay of management, as was done in our case.

On repeat ultrasound examination, there was significant decrease in the size of the lesion in left adnexa with echotexture changing from heterogeneous solid cystic to a predominantly hypoechoic lesion. The free fluid in pelvis and rest of the abdomen largely resolved.

4. Conclusion

High clinical index of suspicion with low threshold for early imaging can make significant difference in management of patients with nontraumatic spontaneous hemoperitoneum. History of anticoagulation should always be enquired in a patient with spontaneous hemoperitoneum.

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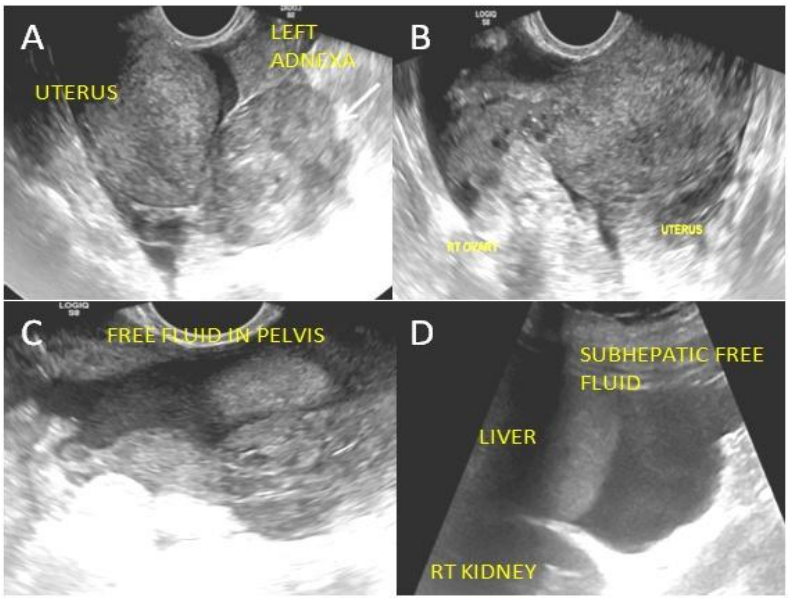

Figure 1: Transvaginal ultrasound - longitudinal (A) and transverse (B, C) images show heterogeneous lesion in left adnexa (arrows) with free fluid showing fine floating internal echoes in pelvis. Uterus and right ovary appear normal. On transabdominal image (D) moderate free fluid with fine echoes was seen in abdomen (subhepatic region)

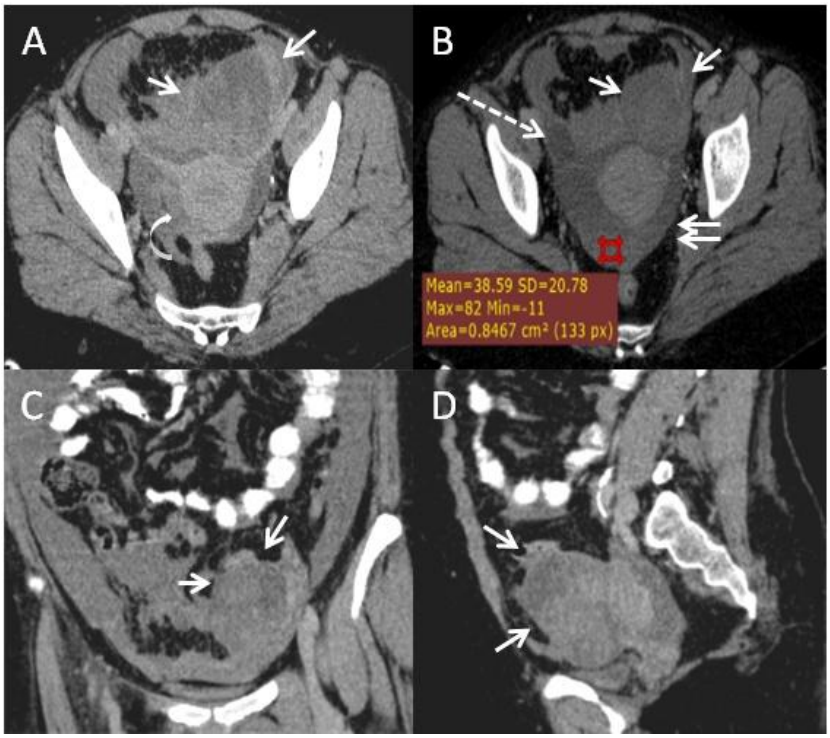

Figure 2: Contrast enhanced CT scan images in axial (A, B), coronal (C) and sagittal (D) plane show minimally enhancing solid cystic lesion in left adnexa (arrows) with free fluid in pelvis (curved arrows), mesenteric sleeves and bilateral paracolic gutters having mean attenuation ~38HU suggestive of hemoperitoneum. Note made of dependent cellular - fluid level or Hematocrit sign (double arrows). Right ovary (dashed arrow) and uterus appear normal in morphology and enhancement.

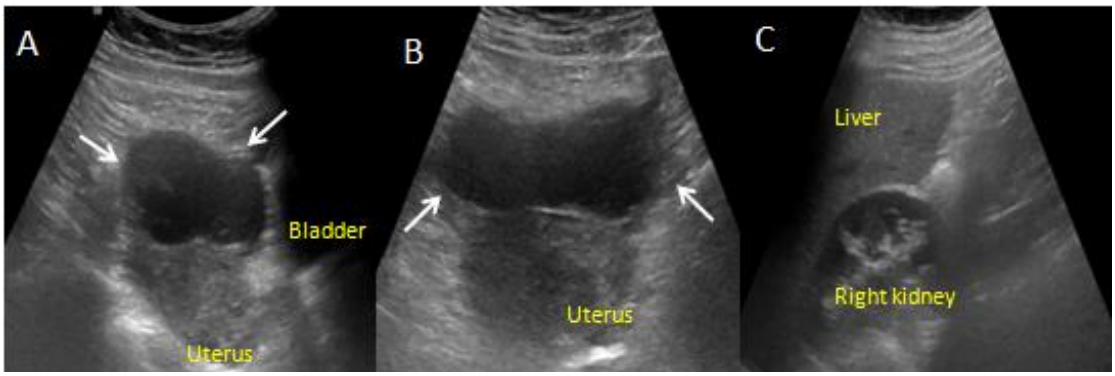

Figure 3: Repeat transabdominal ultrasound images in longitudinal (A, C) and transverse (B) plane show marked reduction in the size and echogenicity of left adnexal lesion (arrows) with no significant free fluid in pelvis and perihepatic region.