Case Report

Pregnancy Luteoma Mimicking Ectopic Pregnancy: A Self-Resolving Lesion Undergoing Surgical Excision

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Abstract

Pregnancy luteoma (PL) is a rare condition, characterized by solid proliferation of luteinized cells. Most patients are asymptomatic; however, virilizing symptoms are seen in 25% of cases. They are usually detected incidentally. Here, we present a case where the patient presented with 6 weeks of amenorrhoea and acute abdominal pain with a positive urine pregnancy test. Clinically, she was diagnosed as a case of ovarian ectopic pregnancy; laparotomy and later, ovariotomy were performed. On histopathology, the lesion was diagnosed as PL. Differential diagnoses include non-neoplastic conditions like ectopic pregnancy, hyperreactio luteinalis, and ovarian neoplasms. An accurate diagnosis is important since PL is a self-resolving, non-neoplastic lesion which usually does not require surgical excision.

Keywords:

Pregnancy luteoma, Ectopic pregnancy, Virilization

Introduction

Pregnancy luteoma (PL) is a rare, non-neoplastic lesion of the ovary, characterized by solid proliferation of luteinized cells. Most patients are asymptomatic, and they are detected incidentally during caesarean section or tubal ligation [2]. Sometimes, features of virilization may be seen in these patients [4]. Most cases resolve completely postpartum. The exact pathogenesis of PL is unknown; however, elevated Human Chorionic Gonadotropin (hCG) levels have been implicated. hCG, having an alpha subunit similar to luteinizing hormone (LH), is able to bind to the LH-hCG receptor of ovarian stromal cells, leading to proliferation and luteinization of ovarian stromal cells [3]. An accurate diagnosis is important since it can be confused with ovarian neoplasms. Here, we present a case of suspected ectopic pregnancy which turned out to be PL.

Case Report

A 34-year-old female patient presented to the Emergency Department with complaints of sudden-onset abdominal pain and nausea. She gave a history of amenorrhoea of six weeks' duration and intake of pills for termination of pregnancy, with the passing of large clots per vaginam. On examination, vital parameters were stable, and tenderness was noted in the lower abdomen. The urine pregnancy test was positive. Urgent bedside ultrasonography revealed a mass lesion in the left ovary with an empty uterine cavity. She was diagnosed as a case of left ovarian ectopic pregnancy.

As pain persisted even with medications, she was shifted to the Operation Theatre and laparotomy was performed. Intra-operatively, a small mass was noted in the left ovary with minimal collection in the Pouch of Douglas. Hence, left ovariotomy was performed, and the excised specimen was sent for histopathological examination. The post-operative period was uneventful.

On macroscopic examination, a lobulated mass measuring 3 × 1.8 × 1.2 cm was received. The cut surface showed a solid-cystic mass measuring 1.8 × 1.2 cm, revealing a peripheral yellow solid area and a central cystic area [Fig. 1]. Microscopically, a well-circumscribed mass was seen surrounded by normal ovarian stroma. The mass showed sheets of large polygonal cells having abundant eosinophilic cytoplasm, round vesicular nuclei, mild nuclear pleomorphism, and distinct nucleoli [Fig. 2a, 2b]. No chorionic villi, areas of haemorrhage, or necrosis were seen. Based on the histological findings, a diagnosis of PL was made.

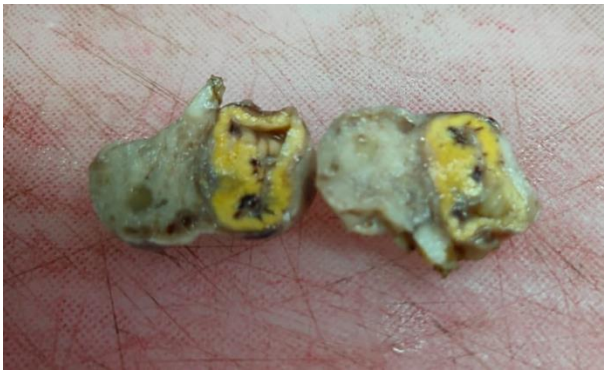

Figure 1: The gross photograph of cut surface of the specimen shows ovary (Black arrow) with a solid cystic lesion (Yellow arrow)

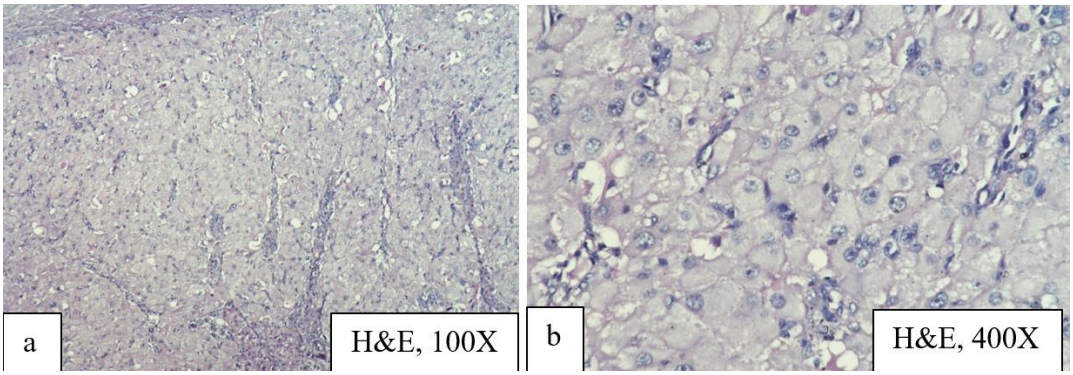

Figure 2: (a) Microphotograph of H&E stained slide shows sheets of large polygonal cells (H&E; 100X). (b) High power microphotograph shows large polygonal cells with abundant eosinophilic cytoplasm, round vesicular nuclei, mild nuclear pleomorphism and distinct nucleoli (H&E; 400X).

Discussion

First description of PL was given by Dr. William Sternberg in 1966 as an ovarian tumor that occurs during pregnancy and regresses spontaneously post-partum [1]. PLs can be unilateral or bilateral, and they may reach up to 20 cm in size. PLs are mostly asymptomatic and are detected incidentally during cesarean section or postpartum tubal ligation [2]. Pre-existing endocrinopathies like stromal hyperthecosis or polycystic ovarian syndrome (PCOS) may be the predisposing factor in some patients [3,4]. Women with multiple pregnancies, advanced maternal age, and luteoma in previous pregnancy are at higher risk of developing PL [4].

One-fourth of PL cases are hormonally active and secrete androgenic hormones, resulting in maternal and fetal virilization [4]. Features of virilization like hirsutism, deep or hoarse voice, and acne may be distressing for the patients. Increased serum androgen levels are seen in patients with these symptoms. There are high chances of virilization in female fetuses, resulting in clitoral enlargement and ambiguous genitalia. However, male fetuses are usually not affected in such cases [4,5]. On ultrasonography, PLs are mostly bilateral or unilateral hypoechoic solid masses with clear borders and rich blood supply, showing multiple solid and well-circumscribed nodules. However, CT or MRI may be superior in detailed analysis [9]. PLs are usually asymptomatic; however, presence of features of virilization may give a clue, whenever present. Increased androgen levels and presence of solid hypoechoic mass on ultrasonography may also give a hint of PL preoperatively.

PLs are yellow or orange solid nodules which microscopically show hyperplasia of uniform theca lutein cells [6]. The differential diagnoses include hyperreactio luteinalis, ovarian hyperthecosis, granulosa cell tumor, thecoma, Sertoli-Leydig cell tumors, and Krukenberg tumor [4,7]. Like PL, hyperreactio luteinalis (HL) is also a benign, self-limiting condition associated with pregnancy and presents as an ovarian mass with features of virilization. However, presence of bilateral cystic ovaries with hypertrophied theca interna cells and distinct sonographic 'spoke-wheel' appearance may help to differentiate it from PL. HL is commonly associated with pregnancies complicated by hydatidiform mole [5].

Ovarian hyperthecosis (OHT), a benign condition of stromal proliferation accompanied by luteinized stromal cells, can also present with features of virilization. However, OHT usually occurs in postmenopausal women and involves both ovaries. It is very rare in younger females and is usually associated with insulin resistance [8]. Krukenberg tumour is ovarian metastatic adenocarcinoma which commonly arises from structures of the gastrointestinal system like stomach, appendix, colon, small bowel, etc. It is often bilateral and can be solid, cystic, or solid-cystic. It can also produce androgens, leading to virilization. During pregnancy, increased androgen production may be noted due to the elevated levels of human chorionic gonadotropin. Histologically, it shows signet ring cell mucinous features [5]. Sertoli-Leydig cell tumor (SLCT) is a primary ovarian neoplasm of sex cord stromal origin. It is usually unilateral and more common in younger women. Virilization is noted in 40%–80% of SLCT cases. However, it is very rarely associated with pregnancy. Ultrasound findings are nonspecific and may range from solid to multilocular masses [5]. Histologically, it shows Sertoli and Leydig components with heterologous elements in many cases.

In our case, clinically, it was thought to be a case of ovarian ectopic pregnancy; however, histology confirmed it to be PL. Microscopically, ectopic pregnancy shows presence of extrauterine chorionic villi, trophoblasts, and decidualised tissue, which were not seen in our case. Most likely, the patient had missed abortion, as history of abortion pills was there, with PL being an incidental finding. Though our patient presented with just 6 weeks of amenorrhoea, PL occurs usually in mid to late pregnancy as per literature [3]. Our patient did not have any features suggestive of virilization. Hormonal tests (serum beta hCG or androgen levels) were not requested. Detailed ultrasound findings were also not available, as only a bedside urgent ultrasound was done by the treating gynecologist.

Due to relative paucity of available literature and lesser awareness in clinicians and radiologists, PLs are not suspected, leading to surgical excision of ovary and reducing the fertility. Additionally, they can be confused with ovarian neoplasms, as they are mass-forming lesions. Awareness in clinicians is important for considering them in the list of differential diagnoses for ovarian masses occurring in pregnant females.

Conclusion

Pregnancy luteoma is a non-neoplastic proliferation of luteinized cells which usually occurs in mid to late pregnancy. Features of virilization may give a hint of PL. Histopathological evaluation confirms the diagnosis and rules out ectopic pregnancy or ovarian neoplasms. Frozen section may be of help wherever suspected. As it regresses spontaneously, awareness about the condition and a more vigilant clinical outlook may help avoid unnecessary surgery, preserve fertility wherever possible, and reduce patient morbidity.

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