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Case Report

Ovarian osseous metaplasia - a clinical mimicker of teratoma: a rare case report

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ABSTRACT

Ossification in the ovary is an extremely rare occurrence, typically associated with mature cystic teratomas, osseous metaplasia in serous or mucinous neoplasms, or endometriotic (chocolate) cysts. Isolated osseous metaplasia in the absence of these conditions is exceptionally uncommon. We report a rare case of a 28-year-old female who underwent laparoscopic oophorectomy following clinical and radiological suspicion of a mature cystic teratoma. However, histopathological examination revealed osseous metaplasia occurring in the background of a polycystic ovary, with no evidence of teratomatous elements. The lesion, although benign, radiologically mimicked a malignant neoplasm, leading to surgical intervention. This case underscores the diagnostic challenge posed by ossified ovarian lesions, which may be indistinguishable from malignant tumors on imaging. Osseous metaplasia, particularly in the context of polycystic ovary, is a rare but benign condition. Recognition of this entity is crucial, as it may allow for conservative management with close follow-up, avoiding unnecessary surgical procedures, especially in young women where fertility preservation is a concern. Ossified ovarian lesions, though rare, should be considered in the differential diagnosis of calcified ovarian masses. Accurate histopathological diagnosis is essential to guide appropriate management and prevent overtreatment.

Keywords: Osseous metaplasia, Ovary, Polycystic ovary, Teratoma mimic, Ossification, Oophorectomy, Benign ovarian lesion

INTRODUCTION

Ossification in ovarian tissue is a rare finding and typically arises in association with specific pathological entities such as mature cystic teratomas, osseous metaplasia in mucinous, or serous neoplasms, thecoma, cystadenocarcinomas, endometriotic cysts, Sertoli-Leydig cell tumor.[1-6] It has also been described in the endometrium as well as fallopian tubes.[7]

Rarely, metaplastic bone formation can occur in other ovarian pathologies, often mimicking malignant tumors on imaging. Accurate diagnosis is critical to avoid unnecessary surgical intervention.

CASE REPORT

A 28-year-old nulliparous female presented with complaints of lower abdominal discomfort and irregular menstrual cycles. On clinical evaluation and pelvic ultrasonography, a complex adnexal mass was identified, raising the suspicion of a mature cystic teratoma. Further evaluation with pelvic magnetic resonance imaging (MRI) suggested a calcified ovarian lesion, reinforcing the provisional diagnosis of a teratoma.

Given the radiological findings, a laparoscopic oophorectomy was performed. Intraoperatively, the ovary appeared slightly enlarged with firm areas. Gross examination revealed a solid-cystic ovarian mass with areas of hard, whitish tissue. Histopathological

examination, surprisingly, showed ovarian stroma with foci of calcification—confirming a diagnosis of osseous metaplasia. No teratomatous, neoplastic, or endometriotic components were identified. Background ovarian tissue showed features consistent with polycystic ovary morphology.

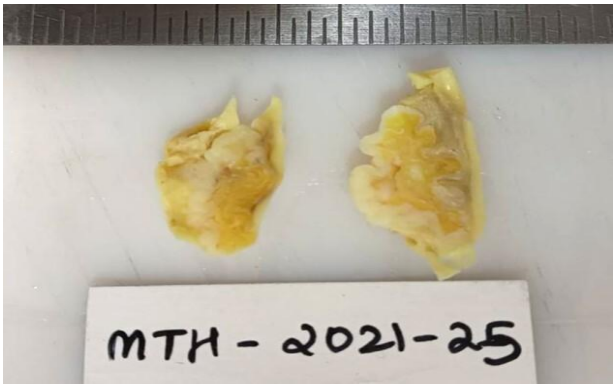

Figure 1: Gross image of cut section of the ovary showing grey white hard areas (after keeping for decalcification).

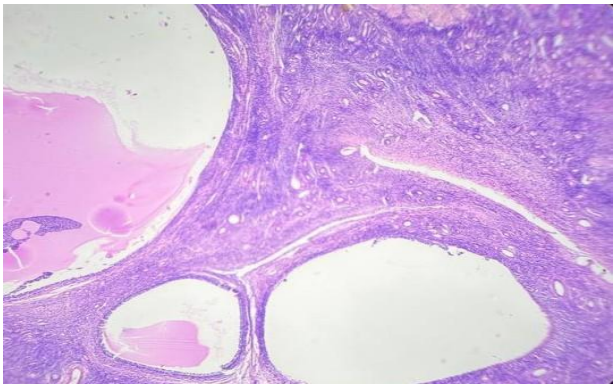

Figure 2: Low power image of ovary showing a polycystic ovary.

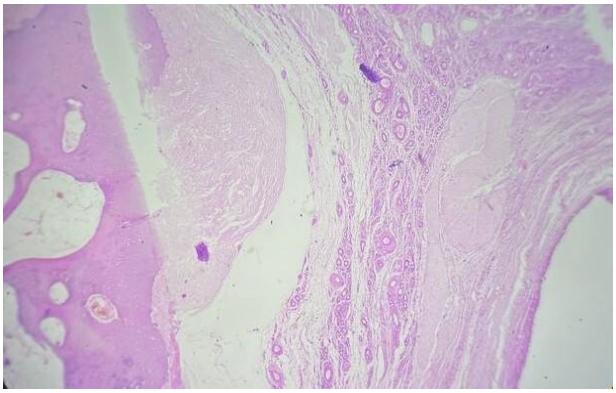

Figure 3: Low power image of ovary showing area of calcification as well as a cystic follicle of the polycystic background.

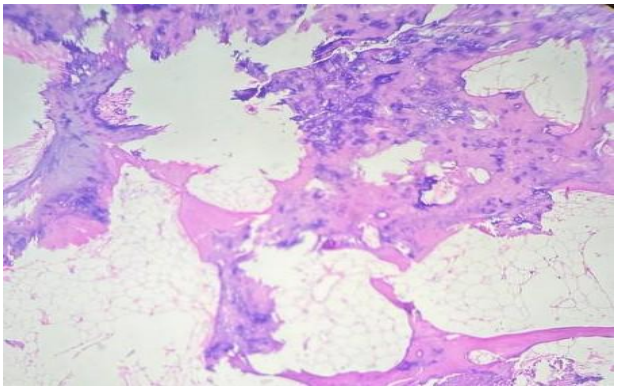

Figure 4: Low power image of ovary showing area of calcification.

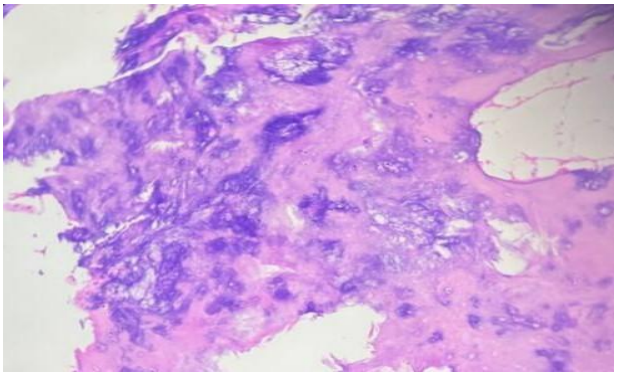

Figure 5: High power image showing ovarian parenchyma replaced by calcification.

DISCUSSION

Osseous metaplasia in the ovary, especially in the context of a polycystic ovary, is an exceedingly rare occurrence. Pathological calcification is classified as either metastatic (associated with hypercalcemia) or dystrophic (associated with hormonal calcemia).[8]

Traditionally, calcification within neoplastic tissue has been regarded as a dystrophic process, typically resulting from cellular degeneration or occurring in conjunction with necrotic areas.[9] The most accepted explanation for the development of such calcifications involves the deposition of calcium in regions undergoing degenerative changes, often linked to ischemia or infectious conditions like malakoplakia. Additionally, calcification has been reported in various hormone-secreting tumors, such as duodenal somatostatinomas, carcinoid tumors, prolactinomas, calcifying Sertoli cell tumors, and gonadoblastomas.[9]

The cause of ossification of the ovary is not known, though several hypotheses have been suggested. Heterotopic bone formation may be stimulated by blood clots, previous torsion, infections, or traumatic inflammation.[10]

As far as we know, this process does not appear to have any prognostic or pathological significance.[4] Still, it is essential to know about it because it clinically and radiologically mimics teratomas or even malignancies, leading to overtreatment.

In this case, imaging findings mimicked a mature teratoma, prompting surgical excision. However, the benign nature of the lesion raises the question of whether close monitoring could be a safer and more conservative approach in similar scenarios, particularly in younger patients where fertility preservation is essential.

CONCLUSION

This case emphasizes the importance of considering osseous metaplasia in the differential diagnosis of calcified ovarian masses. Awareness of this rare benign entity may prevent misdiagnosis and overtreatment. Conservative management should be considered when clinical and radiological suspicion of malignancy is low, and histopathology confirms a benign process.

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