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Endometrial Psammoma Bodies: A Case Report

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Introduction

Psammoma bodies **(**PBs**)** represent a rare feature of calcified tissue present in different organs in association with a number of heterogeneous benign and malignant conditions, although primarily considered pathognomonic of malignancy **(**1**)** in thyroid nodules.

In the female genital tract, they are mostly observed in cervical smears or incidentally in endometrial preparations both in reproductive and postreproductive life and their epidemiological, clinical and histopatological implications are as yet not clear.

Case report

A 36 yrs old patient presented for a general check-up in self- reported good health.

An unremarkable medical history. Regular menstrual cycles. No history of pelvic infections. No history of intrauterine devices. At present on hormonal contraception.

A single normal pregnancy in 2015: delivery was uncomplicated but followed in the immediate afterbirth by a not well described difficult expulsion of the placenta not resulting in manual removal or curettage.

She mentioned though how, for the past three years, ill-defined endometrial abnormalities on routine ultrasound examinations had been observed; no further investigations were carried on , since she was completely asymptomatic and not interested in further pregnancies.

Imaging and hysteroscopy were therefore agreed and performed as follows:

Imaging: ultrasound showed strongly echogenic scattered areas described as:'… 3 flecks of calcifications across the endometrial lining … the largest measuring 11.8 x 2.3 mm…. Other flecks measure 5.8 x 1.8 mm and 1.9 mm…' See Fig .1 and Fig.2

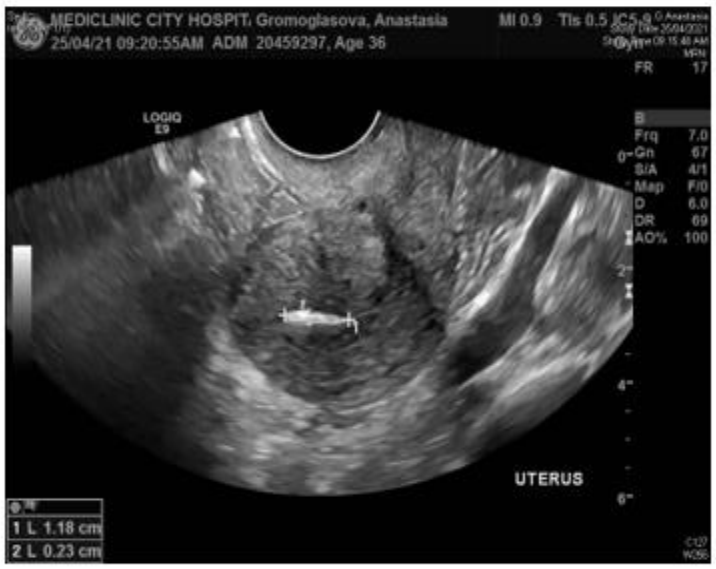

Figure 01

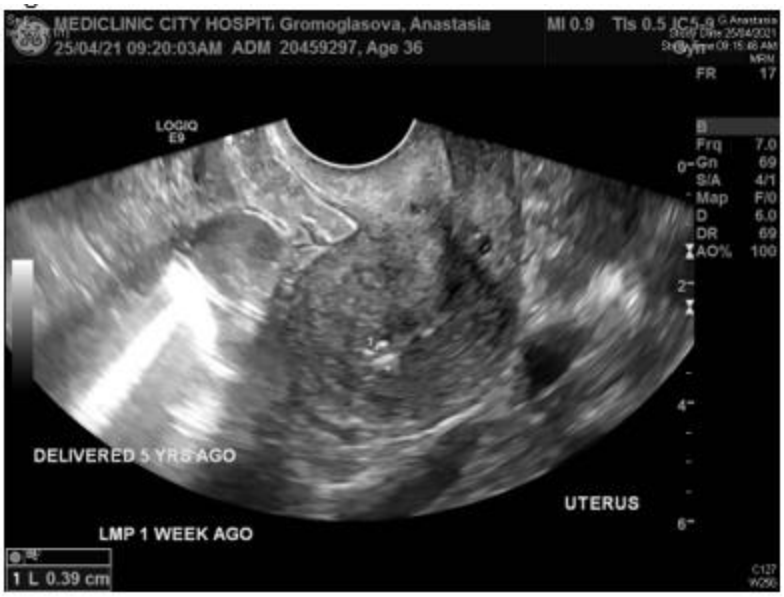

Figure 02

Diagnostic hysteroscopy: an area of shattered glassy flecks on the right lateral wall and similar lesions scattered on the anterior wall in the context of diffuse endometrial atrophic pattern - compatible with hormonal treatment - and micro polyps were observed .

Ample resection ensued with complete removal of the described area and multiple endometrial biopsies. **(**Fig.3, Fig.4**)**

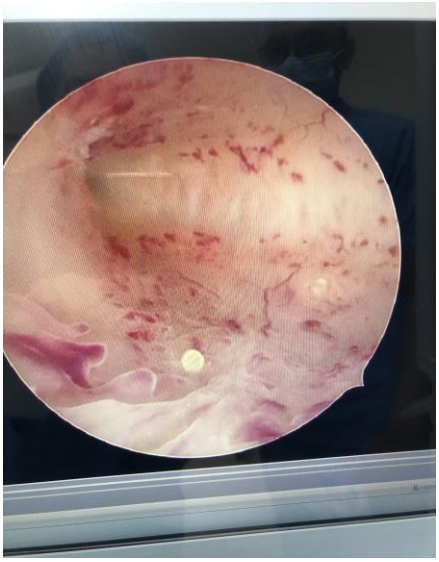

Figure 3. Micropolyps (arrow)

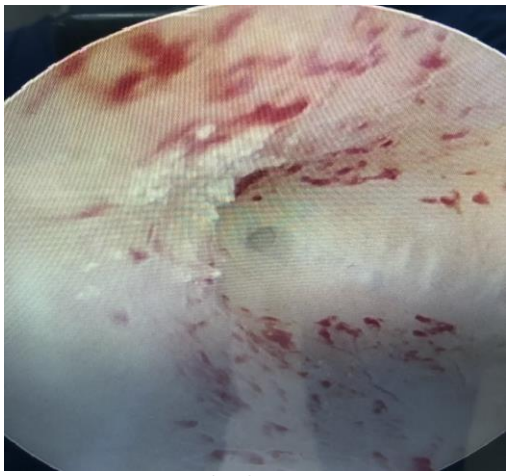

Figure 4: calcifications (arrow)

Histopathology

'Specimen examined on multiple H&E-stained levels revealing heavily excised inactive endometrium and underlying myometrium with focally present psammomatous calcifications. The psammomatous microcalcifications are present within benign endometrial stroma and are not associated with epithelial cells.

Morphologic features if atypical hyperplasia or malignancy are not identified. **(**Figg. 5 to 7**)**

Immunohistochemical studies are performed in order to ascertain the diagnosis. There are scattered CD138 positive mature plasma cells. The psammomatous microcalcifications are not associated with occult AE1/AE3 or WT1 positive epithelial cells.

Diagnosis

Inactive endometrium with psammomatous microcalcifications.

Note: the finding may indicate association with chronic enteritis secondary infertility or an epithelial neoplasm involving ovaries **(**for example serous borderline tumour**)'**

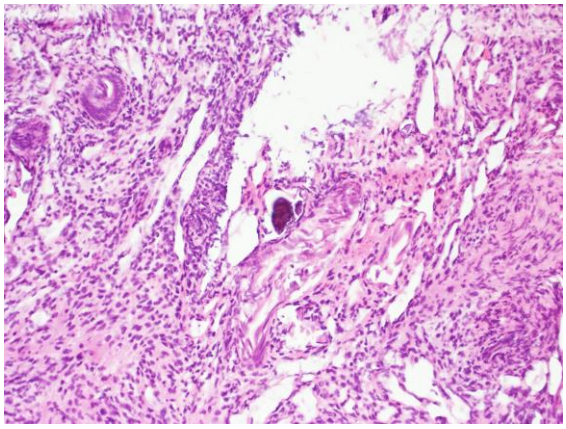

Figure 05

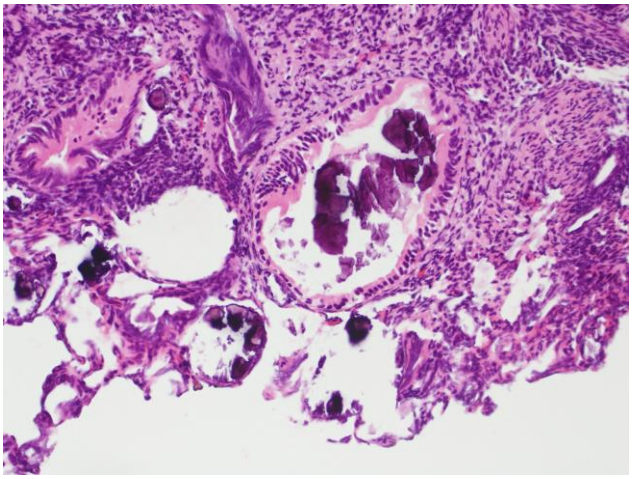

Figure 06

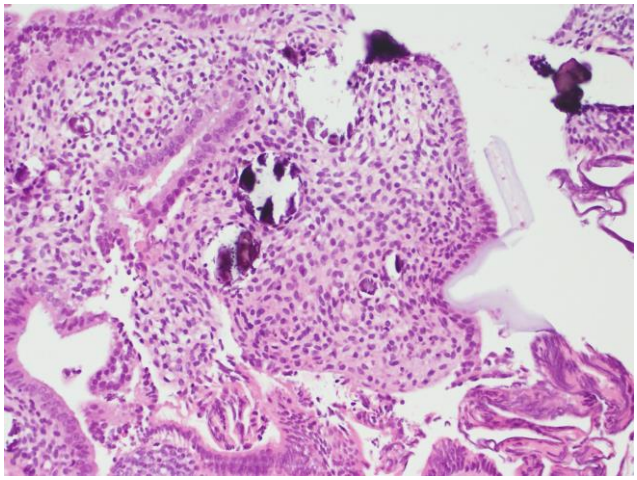

Figure 07

Follow up

Immediate postoperative follow up was unremarkable and no evidence of abnormalities on routine scan.

Second opinion follow ups with oncologist gynaecologist was arranged.

Hysteroscopic reassessment over time, to rule out recurrence, was recommended.

Discussion

The finding of endometrial calcifications is extremely uncommon , probably under-reported , amounting to less than 300 hundred cases, according to a literature review published in 2016 **(**2**)**.

Still obscure in terms of pathogenesis and clinical significance **(** 2**)(**3**)**, it is traditionally assumed to result from endometrial insult reaching the basalis layer, impairing the regenerative capacities, as in post abortion curettages or D&Cs , especially if repeated. Growing evidence exists indeed for a role of multipotent perivascular , adventitial and stromal stem cells expressing MSC markers, which might be overactivated **(**4**)** under traumatic conditions , giving rise to fibrotic tissue as in Asherman syndrome. Similar mechanisms might underlie the osseous metaplasia.

More recently, a case series in which possible association with past abnormal placentation has been published **(**5**)** . Out-dated, since not supported by DNA studies, the theory claiming its derivation directly from remnants of products of conception **(**6**)**.

Possible role for chronic inflammation might nevertheless give reason for those cases without past history of pregnancy or abortion.

PB represent an even rarer feature of calcified tissue in this context, in association both with benign and malignant conditions. They are defined as 50-70 mm round shaped, concentrically laminated, calcified concretions with a glassy appearance, and are sometimes difficult to differentiate from pure stromal calcifications. In some contexts, as in thyroid nodules **(**1**)** or meningiomas, they represent a marker of malignancy.

In the female genital tract - cervix and endometrium - they are mostly observed as incidental finding in otherwise asymptomatic patients, as reported in a case series published in 2002 **(**7**)**. Nevertheless, they are also present in association with serous ovarian cystoadenocarcinoma and, more rarely, in endocervical adenocarcinoma, in uterine serous carcinoma, and in serous papillary adenoma of borderline malignancy of the broad ligament although no data on the incidence of the association. Uncertain as well the significance and pathogenesis in such cases: they might originate as calcification of necrotic or neoplastic tissue, perhaps metastatic, or as simple concentric seeding of crystals in the context of dystrophic tissue **(**1**)** and also as the result of possible humoral immune reaction **(**8**)** such as

in meningiomas. They can therefore not only be regarded as calcification in the context of dystrophy or chronic inflammation, but also as a more complex process of stepwise thrombosis, secretion of precursors and cell necrosis, ultimately limiting the neoplastic invasion.

However, given this association, particularly in postmenopausal women, a complete workup - imaging, hysteroscpy, laparoscpy- is recommended. **(**9**)**.

Conclusion

The conflicting hypotheses on the pathogenesis of the condition, the diverse clinical presentations and, importantly, the described although rare association with malignancies of the reproductive tract , represent a challenge for an adequate follow up strategy of patients with osseous metaplasia, notably when the rare feature of psammoma bodies are observed. Better identification of the underlying biomolecular processes might shed light on their significance and management. The role of stromal stem cells in this context and more broadly in the endometrial regenerative processes appears once more crucial.

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