

Sonographic Features Associated with Psammoma Bodies in Malignant Adnexal Lesions

Dr Cristina Taliento, Dr Stefan Timmerman, Dr Serena Guerra, Professor Anne-Sophie Van Rompuy, Professor Dirk Timmerman, Professor Wouter Froyman

Introduction

Psammoma bodies (PB) are concentric, lamellated structures typically composed of calcium and trace amounts of other minerals, ranging from 20 to 100 μm in diameter. Their prevalence has been more frequently reported in low-grade serous ovarian carcinomas (LGSOC) compared to high-grade serous ovarian carcinomas (HGSOC). Although data on their prevalence could have clinical implications for imaging, studies that specifically address the prevalence of PB in ovarian malignancies are limited. This study aims to investigate the prevalence of PB in malignant adnexal masses and explore their association with demographic and pathological variables.

Methods

We conducted a retrospective analysis of prospectively collected data from patients previously enrolled in the IOTA 3, IOTA 5 and IOTA 7 studies at a single institution (University Hospital Leuven, Leuven, Belgium) between 2010 and 2024. Only cases with malignant ovarian tumors were included. Patients who did not undergo primary or interval debulking surgery, biopsy for ovarian cancer, or those without a pathology report from the referring institution were excluded. The chi-squared test, Fisher's exact test, or Mann-Whitney U test was used to assess the strength of associations between variables. A p-value < 0.05 was considered statistically significant.

Results

A total of 228 malignant adnexal masses were included in the study, with a mean patient age of 56.4 ± 15.26 (DS) years. Among these, 201 were epithelial tumors: 119 serous, 8 clear cell, 19 endometrioid, 2 carcinosarcoma, 2 mesonephric-like adenocarcinoma, 47 mucinous, 2 seromucinous, and 2 classified as miscellaneous tumors. The remaining masses were non-epithelial, consisting of 3 germ cell tumors, 5 sex cord-stromal tumors, and 19 secondary metastases. The prevalence of PB was 19.3% (44/228) among the malignant adnexal masses. PB presence was significantly associated with patient age ($p < 0.001$) and advanced FIGO stage (III-IV, $p < 0.001$). Furthermore, we found that the presence of PB was strongly associated with serous histology ($p < 0.001$). Among these, 75.6 % (31/41) were HGSOC, 12.2% (5/41) were LGSOC, and 12.2% (5/41) were serous borderline ovarian tumors.

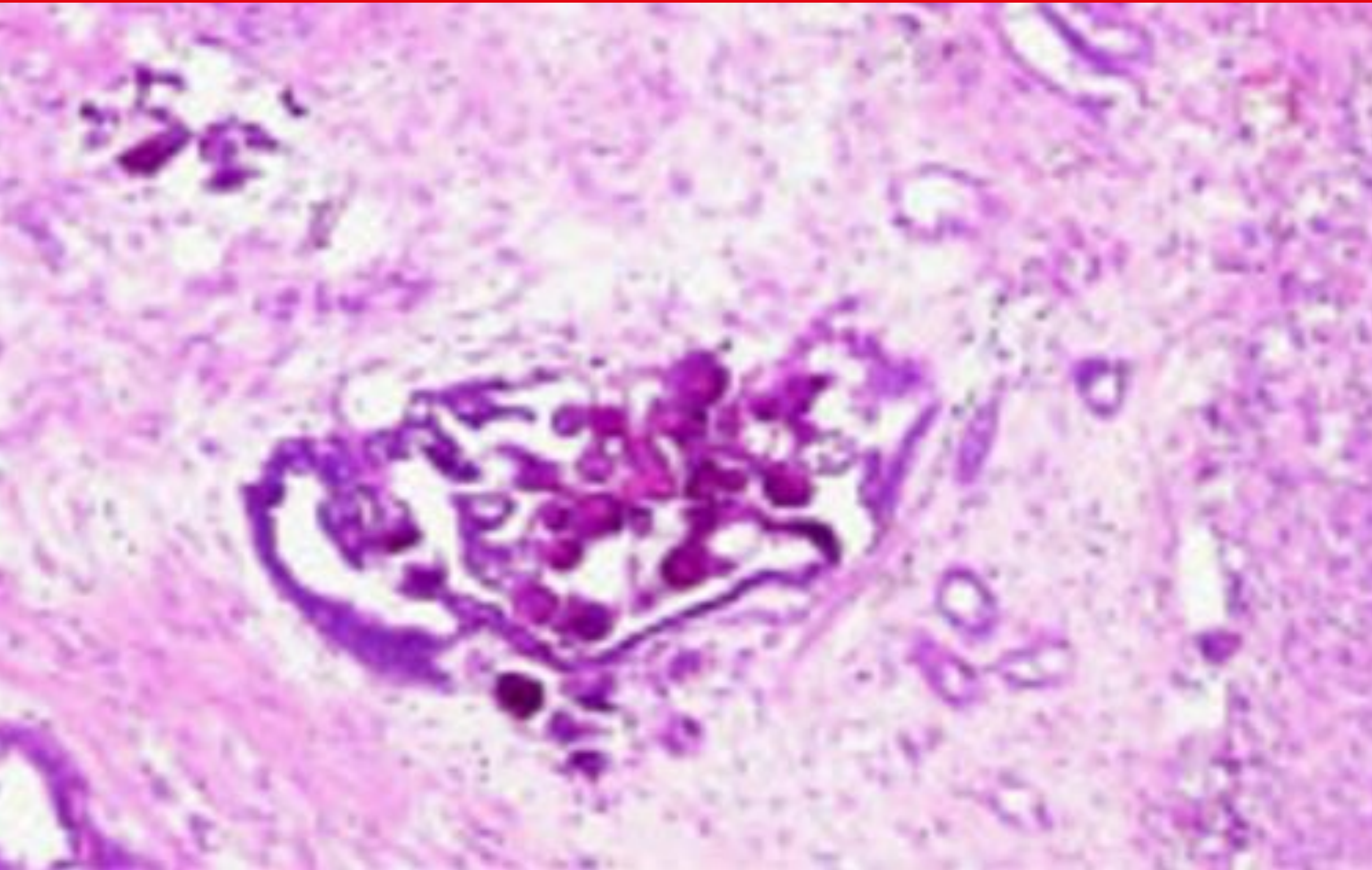


Figure. Psammoma bodies

KU LEUVEN

Conclusion

In malignant adnexal lesions, the presence of PB on final histology was associated with increasing age, advanced FIGO stage, and serous histology. Sonographic features, such as internal US acoustic shadows and hyperechoic spots resembling microcalcifications, showed a significant association with the presence of PB, either alone or in combination. Future studies should validate these clinical and US findings in malignant ovarian tumors through prospective research.