Clinical outcomes of patients with ovarian seromucinous tumors: A case series of 63 patients

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Topic: Ovarian

Objectives
Seromucinous tumor of the ovary is a rare type of ovarian tumor with less than 50 cases of seromucinous ovarian carcinomas described in the English literature which has posed a challenge to both treating clinicians and pathologists (1,2). The diagnosis of seromucinous ovarian tumors have also evolved over time with most recent clinicopathologic and molecular studies suggesting that these tumors may be a variant of endometrioid carcinoma, rather than a mix of serous and mucinous components as previously described. There are a few case series focused on the histopathology of these tumors and very limited data on the clinical outcomes of patients with seromucinous ovarian tumors. Here, we report a case series of 63 patients who were diagnosed with a seromucinous tumors of the ovary, including benign, borderline and carcinomas.

Methods
This was a case series of patients diagnosed with seromucinous tumors of the ovary at Cedars Sinai between 11/2005 and 12/2020. The pathology database was searched for ovarian tumors containing the terms 'seromucinous', 'endocervical type' and 'müllerian type' from 2005 to 2020 at Cedars Sinai to include diagnoses from eleven staff pathologists. A total of 63 cases were retrieved. Retrospective chart review was performed to obtain baseline characteristics, preoperative evaluation and progression free survival (PFS). Descriptive statistics are used for analysis of our findings.

Results
Of the 63 cases identified, six cases were excluded due to lack of data for a total of 57 patients - 48 borderline tumor, 7 carcinoma and 2 benign. For borderline tumors, the mean age at diagnosis was 44 with mean BMI of 29. Mean CA-125 level was 224.85 with range between 11 and 2,470. 12/48 (25%) patients had bilateral tumors and 21/48 (43.75%) had tumors over >10cm. Endometriosis was noted in 24/48 (50%) of the specimen. Majority of the patients were symptomatic with 28/48 (52.08%) reporting pain, 5/48 (10.4%) reporting bloating and 3/48 (6.25%) reporting increasing abdominal girth. In the 7 patients with seromucinous carcinoma, mean age of diagnosis was 55 with mean BMI of 24.8. The median CA-125 was 56 with a range between 11 and >10,000 and an outlier of >10,000. Two of seven (28.6%) patients had bilateral tumors and 4/7 (57%) had tumors >10cm. The stages were 1A (2), IC (2), 2A (1), 2C (1) and 3C (1). All (100%) patients also had endometriosis on their pathology. All but stage 1A patients were recommended chemotherapy though one declined, and the patient with stage 3C disease also received letrozole maintenance therapy. One patient with stage 1A disease developed an adnexal mass on the contralateral ovary that was surgically managed and returned as low-grade mucinous carcinoma. Interestingly, only 2/7 (28.57%) had any symptoms and the remaining evaluation were initiated based on routine exam or incidental finding on imaging done for other reasons. In the two patients with benign tumors, the mean age was 42, with mean BMI of 21.79. One of two (50%) patient had bilateral tumors as well as tumor >10cm. No CA-125 levels were drawn for the benign patients and both also had evidence of endometriosis on their pathology. Both patients initially presented for evaluation due to pain. For progression free survival, an additional twenty-five patients were excluded from analysis due to lack of follow up beyond their
post-operative visit, leaving 32 patients - 24 borderline tumors, 7 carcinomas and 1 benign. All patients were without evidence of disease at their last follow-up with mean follow up of 43.7 months for those with carcinoma, 38.2 months for borderline and 74.2 months for the one patient with benign tumor.

Conclusions
Patients with ovarian cancer are most frequently diagnosed between age 55-63 and those with seromucinous ovarian cancer falls into the lower end of the spectrum with average age of 55 at diagnosis. Compared to other epithelial ovarian cancers, patients with seromucinous carcinomas tended to present at an earlier stage (85% were stage 1 or 2). Our case series had a higher rate of endometriosis with 50% of borderline tumors and 100% of carcinomas associated with endometriosis compared to previously reported rates of 30-70%. Prior studies have also reported 20-40% bilaterality which was consistent with our findings in that 25% of borderline, 28.6% of carcinomas and 50% of benign tumor presented with bilateral adnexal masses. Interestingly, those with borderline tumors had a higher average CA-125 level at presentation compared to those with carcinomas.