

Result(s)* The mean age was 50. The average tumor size was 28 mm. The tumor was bifocal in 20%. 55% of tumors were Grade II SBR.

Invasive ductal carcinoma (IDC) was the most common histological subtype (74%). It was associated in 79% of cases with ductal carcinoma in situ (DCIS).

For the CTCS, 60% were DCIS, and 40% of the cases were invasive ductal carcinoma.

A complementary treatment consisting of mastectomy was indicated to all patients.

A residual tumor was detected in the remaining mammary gland in 60.4% of cases, out of which 39% were DCIS.

Chi-square test found that the presence of DCIS in CTCS, the lymphovascular invasion, and the size of tumors were not related to the presence of residual invasive or in-situ disease ($p < 0.05$).

Conclusion* CTCS can help to detect residual or multifocal diseases.

Nevertheless, we need to find a way to avoid mastectomy with no residual disease in the remaining mammary gland.

914 TUMOUR SIZE AND RESECTION MARGIN STATUS AFFECT RECURRENCES AND SURVIVAL IN RADIATION ASSOCIATED ANGIOSARCOMA OF THE BREAST

¹E Fox*, ²R Merard, ³R Warner, ³S Bains, ⁴A El-Ghobashy, ^{1,5}A Shaaban. ¹Cellular Pathology, Queen Elizabeth Hospital Birmingham, Birmingham, UK; ²Cellular Pathology, Queen Elizabeth Hospital Birmingham, UK; ³Oncoplastic Breast Surgery, Queen Elizabeth Hospital Birmingham, Birmingham, UK; ⁴Department of Gynaecological Oncology, The Royal Wolverhampton NHS Trust, Wolverhampton, UK; ⁵University of Birmingham, Birmingham, UK

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Introduction/Background* Radiation associated angiosarcoma of the breast (RAAS) is a rare aggressive post-radiotherapy complication with an estimated incidence of 0.05-0.3%. Currently, there is minimal evidence on presentation, outcome and factors affecting the likelihood of recurrence and survival.

Methodology All patients diagnosed with RAAS, managed at the Birmingham Sarcoma Service (Birmingham, UK) between February 2013 and March 2021 were identified. Full clinical, pathological and patients' outcome data were collected. The non-parametric Mann-Whitney U test was used to test statistical significance and receiver operating characteristic (ROC) curve was utilised to determine threshold values.

Result(s)* A total of 53 patients fulfilled inclusion criteria. Their previous breast cancer diagnosis spanned from 1982-2004. The median age at diagnosis was 71 years (range 56-93). The median interval from radiotherapy to RAAS diagnosis was 8 years (range 1-37 years). This interval has significantly shortened over the years ($p < 0.001$). Sixteen patients (30%) developed recurrent RAAS and 19 patients (36%) died of the disease. The overall 5-year survival was 52.5%.

Distance to resection margin was found to be highly significantly different ($p = 0.002$) between patients who had no recurrent RAAS (median clearance 16 mm) and recurrent disease (median clearance 6 mm). The threshold margin where recurrence was less likely to occur was 7.5mm (area under the curve (AUC)=0.769, sensitivity 82.9%, specificity 56.5%).

Tumour size was significantly larger (median 102.5mm) in those patients who died compared to those who survived (median size 42.5mm; $p = 0.02$). Patients with tumour sizes greater than 47.5mm were more likely to die from the disease

(AUC=0.701, sensitivity 81.3%, specificity 56.2%). Neither patient age nor grade of the angiosarcoma correlated with lesional recurrence or patient outcome.

Conclusion* RAAS is associated with high likelihood of recurrences and mortality. Tumour size and margin status are significant predictors of recurrences and patient survival. Over the last decade, the number of diagnosed cases has increased with a shortening in the interval between radiotherapy and onset of RAAS. Due to the rarity and aggressiveness of the disease, management of RAAS at a specialist centre may provide superior outcomes.

948 BRENNER BORDERLINE OVARIAN TUMOR: A CASE SERIES AND LITERATURE REVIEW

G Ricotta*, A Maulard, P Pautier, A Leary, C Chargari, S Gouy, C Genestie, P Morice. Gustave Roussy, Villejuif, France

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Introduction/Background* Most frequent borderline ovarian tumors are serous and mucinous subtypes. Less frequent borderline diseases are endometrioid, clear cell and Brenner tumors (BBOT). Very few are known about this later subtype and most of reports concerns very short series or case reports. The aim of this study was to determine the prognosis of a continuous series of BBOT and to analyze data published in the literature about this rare entity.

Methodology A retrospective review of patients with BBOT treated or referred to our institutions. A centralized histological review by a reference pathologist and data on the clinical characteristics, management and outcomes of patients were required for inclusion.

Result(s)*

Seventeen patients were identified Median age was 62 (range 42-85) years. Six patients underwent a unilateral salpingo-oophorectomy and 11 a bilateral salpingo-oophorectomy +/- hysterectomy and/or staging surgery. Sixteen patients had unilateral tumor and all patients had a stage-I disease. Stromal microinvasion was observed in 3 cases. The median follow-up was 60 months (range 7-118 months). One patient had developed a recurrence in contralateral ovary after a unilateral salpingo-oophorectomy. One patient had previous history of urothelial tumor.

Conclusion* Peritoneal staging surgery is not required, because all patients reported had stage-I disease. One recurrence occurred. When reviewing all the 82 cases reported in the literature (included ours), 9% had previous history or synchronous urothelial tumor suggesting then the need of at least careful checking of urological disease in patients with BBOT.

1009 DEEP LEARNING FOR IMPROVED DETECTION OF PREMALIGNANT LESIONS IN THE FALLOPIAN TUBE, A PROOF OF CONCEPT

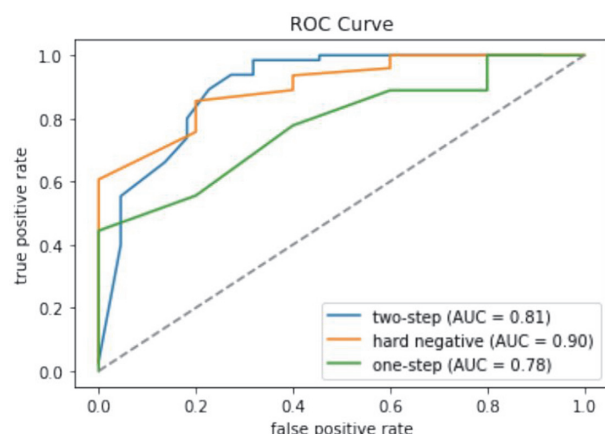
¹J Bogaerts*, ²M Van Bommel, ¹J Linmans, ¹N Van den Hork, ¹J Bulten, ²J De Hullu, ¹M Simons, ¹J Van der Laak. ¹Radboud University Medical Center, Pathology, Nijmegen, Netherlands; ²Radboud University Medical Center, Gynecologic oncology, Nijmegen, Netherlands

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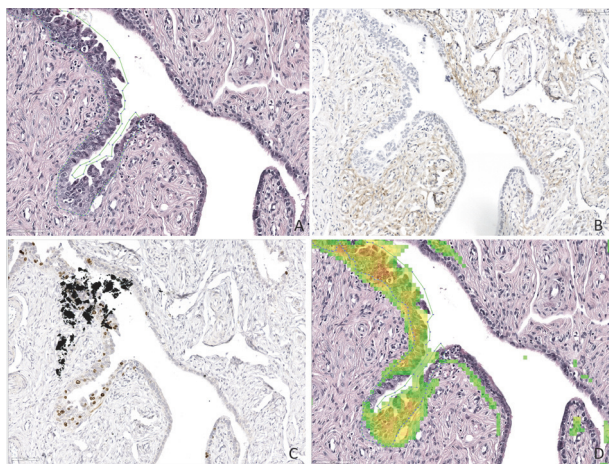
Introduction/Background* Risk reducing salpingo-oophorectomy is an effective intervention to reduce the risk of high

grade serous carcinoma (HGSC) in patients with a BRCA1/2 pathogenic variant (PV), but results in significant short and long-term health risks. New interventions, such as risk-reducing salpingectomy with delayed oophorectomy are promising. In this alternative approach, the detection of serous tubal intraepithelial carcinoma (STIC) as precursor to HGSC, has become more important. The detection of STIC indicates an increased risk for HGSC and would prompt for an immediate oophorectomy. Unfortunately, reproducibility of STIC diagnosis is only moderate, even among experienced gynecological pathologists. The aim of this pilot study is to develop and validate an AI algorithm for automated detection of potential STIC lesions in scanned H&E slides, to aid the pathologist in diagnosing STIC.

Methodology We collected and digitalised 60 cases of STIC and 65 control cases. STIC diagnosis was confirmed using p53 and Ki-67 immunohistochemical stainings (IHC). The dataset was split into 50 cases for training, five for validation and five for testing. We developed a Convolutional Neural Network and compared two approaches: directly detecting STIC (one-step) or first detecting all epithelium and subsequently detecting STIC within epithelial regions (two-step). Additionally, we evaluated whether we could improve the network by enriching the training data with hard negative examples.



Abstract 1009 Figure 1



Abstract 1009 Figure 2

Result(s)* We found that the optimal configuration for detection of STIC was the two-step approach, with training set enrichment by hard negatives. This network reached an area under the receiver operating curve of 0.90 (figure 1). Visual inspection of cases in the test set showed concordance between the model output, p53 and Ki67 IHC, and pathologists' annotations (see example model output on H&E stained tissue in figure 2).

Conclusion* We present a convolutional neural network that can successfully detect STIC lesions in whole slide images. AI has the potential to aid the pathologist in the detection of STIC and assist in producing more accurate and consistent diagnosis. Additional performance and robustness is expected to be achieved by expansion of the dataset.

1029 UNUSUALLY BREAST METASTASES

¹S Sakhr, ²K Tlili, ³S Kammoun, ⁴M Bouhani*, ⁵Y Houcine, ³K Hamza, ²H Bouaziz, ⁶A Ghoucha, ¹I Bettaib, ⁶M Idriss. ¹Institut Salah Azaiz, Surgical Departement, Tunis, Tunisia; ²Azaiez Institute of Oncology, Department of Pathology, Tunisia; ³Salah Azaiez Institute, anatomopathology, Tunis, Tunisia; ⁴Salah Azaiez Institute, surgical departement, Tunisia, Tunisia; ⁵Institut Salah Azaiz, anatomopathology, Tunis, Tunisia; ⁶Institute Salah Azaiz, anatomopathology, tunsia, Tunisia

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Introduction/Background* The breast is the most common site of primary malignancies in adult women, but is an uncommon site for metastasis from extramammary malignancies. Breast metastases from extramammary malignancies have both haematogenous and lymphatic routes. We report 10 cases of breast metastases in our pathology lab between 2014 and 2020.

Methodology We have identified all the cases of breast metastases diagnosed between 2014 and 2020.

Result(s)* We found 10 cases of breast metastases from extramammary malignancies. All patients was female with a middle age of 42 years. The primary malignancies was a melanoma in 3 cases, an ovarian carcinoma also in 3 cases, a fibro sarcoma, a rhabdomyosarcoma and a nasopharyngeal carcinoma in 1 case each. The diagnosis was based on morphological features but also on immunohistochemistry especially with the ovarian carcinoma which exhibit some similar features to a primary breast carcinoma.

Conclusion* Breast metastases from extramammary malignancies show variable histological features. Therefore, the possibility of metastatic lesion should be considered in evaluating breast lesions in patients with primary malignancy in other organs. Awareness of typical and atypical imaging features of such lesions may be helpful to diagnose metastatic lesions in the breast.

1111 ATYPICAL (C3) AND SUSPICIOUS (C4) CATEGORIES IN BREAST FINE NEEDLE ASPIRATION

¹S Sakhr, ²K Hamza, ²Y Houcine, ²S Kammoun, ²K Tlili, ³M Bouheni*, ²A Goucha, ²I Bettaieb, ²M Driss. ¹Institute Salah Azaiz, surgical departement, Tunis, Tunisia; ²Institut Salah Azaiz, anatomopathology, Tunis, Tunisia; ³Institut Salah Azaiz, surgical departement, Tunis, Tunisia

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Introduction/Background* The present study was carried out over a 1-year period (January 2017-December 2017) and conducted at the cytology unit of Pathology Department (Salah Azaiez