Correlation between pre-operative and final histological diagnosis of endometrial carcinomas in NHS Grampian

NHS Grampian

Objectives

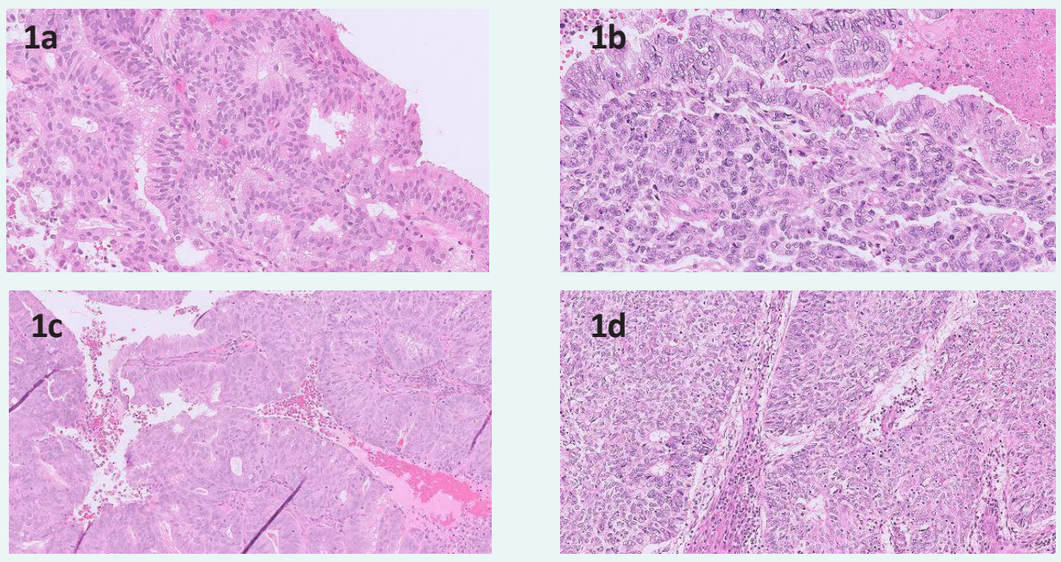
The aim of this study was to assess the concordance between pre-operative endometrial biopsy diagnosis with the final histological diagnosis in women undergoing a hysterectomy for endometrial carcinoma in our Health Board.

Introduction

Endometrial cancer is the sixth most commonly diagnosed cancer in women and the second most commonly diagnosed female genital organ cancer[1]. It is diagnosed and subclassified on the basis of morphology using the FIGO (The International Federation of Gynecology and Obstetrics) classification, and according to Bokhman, splits into two broad pathogenetic types[2]. Type I tumours, the most common, are endometrioid endometrial carcinomas, further sub-divided on morphology into FIGO grade 1 endometrioid carcinoma (G1E) with less than 5% solid architecture, FIGO grade 2 endometrioid carcinoma (G2E) with between 5 and 50% solid architecture and FIGO grade 3 endometrioid carcinoma (G3E) with over 50% solid architecture. The presence of diffuse (over 50%) high grade nuclei also raises the grade by 1. Bokhman's second sub-division is of type II tumours which are non-endometrioid and include serous carcinoma, clear cell carcinoma and carcinosarcoma. All type II tumours are regarded as FIGO grade 3 carcinomas.

The diagnosis of endometrial carcinoma is usually made on an endometrial biopsy. The main first treatment option is surgical with hysterectomy and consideration of pelvic lymph node sampling for high grade or high stage carcinomas, with possible post-surgical chemotherapy and/or radiotherapy dependent on the histological resection findings. The endometrial biopsy diagnosis, alongside imaging findings, helps to determine the operative treatment and specifically whether lymph node dissection is undertaken. Lymph node sampling is considered for 'high risk' carcinomas. Therefore the biopsy is significant in guiding individual patient options. This study was undertaken to assess concordance between pre-operative endometrial biopsy diagnosis with the final histological diagnosis in women undergoing a hysterectomy, and to identify the reason for non-concordance in those high risk cases for which the resection diagnosis was higher grade than the initial biopsy, thus potentially altering the surgical decision.

Figure 1. Photographs of two cases where diagnosis changed upon resection. Figure 1a shows a biopsy sampling G2E and figure 1b shows a photograph from the subsequent resection showing an area of carcinosarcoma. Figure 1c shows a biopsy sampling G2E and figure 1d shows a photograph from the subsequent resection showing a solid area of carcinoma; overall the resection was graded as G3E.



Material and methods

A retrospective analysis was made of all patients with a biopsy of endometrial carcinoma and subsequent hysterectomy resection received in our department over 2 years (2019 and 2020). There were 153 biopsies with a diagnosis of endometrial carcinoma. Eight of these cases did not undergo surgical resection (due to receiving adjuvant treatment or due to patient co-morbidities preventing surgery). A further three cases showed no residual malignancy on resection (one of these cases due to complete pathological response to neo-adjuvant treatment). And five cases diagnosed malignancy but due to sub-optimal specimen or complicated histological features it was not possible to subtype the malignancy. Thus there was a total of 137 cases in which to compare histological subtype and FIGO grade in the biopsy and subsequent hysterectomy.

Results

Full concordance between biopsy and hysterectomy diagnosis was achieved in 108 of the total 137 cases (78.9%). Results table 1 shows concordance divided by subclassification of diagnosis. Results table 2 shows the sub-division of type I and type II carcinoma diagnoses.

Diagnosis	No of times diagnosis made on biopsy	No of times diagnosis made on subsequent resection	Concordance between biopsy and resection diagnosis (%)
Grade 1 endometroid	53	43	81.1
Grade 2 endometroid	48	32	66.7
Grade 3 endometroid	16	11	68.8
Serous carcinoma	12	11	91.6
Clear cell carcinoma	4	4	100
Carcinosarcoma	4	4	100
FIGO grade 3 carcinomas (including grade 3 endometroid)	36	33	91.7

Results table 1. Assessment of concordance of biopsy with resection diagnosis sub-divided by histological and grade subtype.

Diagnosis	No of times diagnosis made on biopsy	No of times diagnosis made on subsequent resection	Concordance between biopsy and resection diagnosis (%)
Type I carcinoma	117	115	98.3
Type II carcinoma	20	20	100

Results table 2. Assessment of concordance of biopsy with resection diagnosis sub-divided into type I and type II tumours.

Of the 29 discordant cases, 20 cases were an increase in grade (11 cases increase from G1E to G2E, 8 cases increased from G2E to G3E, and a G2E increased to carcinosarcoma (grade 3).). Two cases changed subtype but not FIGO grade (a change from G3E to carcinosarcoma and a serous carcinoma to carcinosarcoma). There were 7 cases with a decrease in grade; 6 G2E to G1E and one G3E to G2E. The most clinically important changes are the change from grade 2 to grade 3 as this would affect the surgery the patient is offered and this occurred on 9 occasions.

On review of the 9 cases which were upgraded from grade 2 to 3, 7 were due to under-representation of components in the biopsy (1 with the sarcomatous component not represented and 5 with inadequate representation of solid areas in the biopsy). Of the remaining 3 cases, on review, 2 were considered to remain grade 2 but high stage on resection. The third was an unusual tumour which morphologically was grade 2 but had been upgraded on the basis of very extensive lymphovascular space invasion showing high grade nuclei and clear cell change.

Discussion

Our overall discordance of 78.9% compares favourably to concordance rates published from other centres, eg 60.75%[3], and 64.5 %[4]. We show 100% concordance with type II carcinomas, which probably reflects a combination of increased awareness around the histology of these tumours, the specificity of immunohistochemistry, and subspecialist reporting in our department. We also show strong concordance with G1E (81.1%) which represent a relatively easy diagnosis with, by definition, uniformity of the glandular architecture. In our department the poorest concordance is with G2E and G3E carcinoma. We reviewed all the reports where there was a discordance, and the histology of cases with a clinically significant difference in grade between the biopsy and resection specimen (ie grade 2 to grade 3 carcinomas). Our analysis shows the main reason for discordance is sampling in the biopsy (70%). Discordance in these cases is not surprising given that a biopsy often represents superficial sampling of a larger malignancy, in which the deeper aspects of the tumour are often histologically more aggressive. Additionally, for carcinosarcoma, the dediffentiated, sarcomatous element may be very focal. Figure 1 shows photographs taken of two of our reviewed cases where the biopsy lacked adequate representation of the carcinoma thus the diagnosis was changed after subsequent resection.

In our department when there is a discordance the original endometrial biopsy histology is reviewed alongside the resection histology and a comment made in the report; often stating the relative change in solid architecture in the resection compared to the initial biopsy.

Conclusion

Overall, our team of 4 gynaecological pathologists achieved good (76.6%) concordance between endometrial biopsy and hysterectomy grade, with very good concordance for recognition of FIGO grade 3 tumours (91.7%) and, encouragingly, 100% concordance with type II carcinomas. Nonetheless, clinicians (gynaecologists and oncologists) need to be aware that the biopsy histology is not 100% predictive for resection histology.

Reference

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