Case Reports

Primary malignant melanoma arising in an ovarian cystic teratoma

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Summary

Cystic ovarian teratomas are common tumours. Malignant melanoma developing in a teratoma, however, is an extremely rare diagnosis. A 49-year-old woman with a history of weight loss and abdominal distension was referred to UCLH. She underwent laparotomy and bilateral salpingo-oophorectomy for a large right ovarian tumour. Histopathology revealed a malignant melanoma and carcinoid tumour in the right ovarian teratoma and an endometrioid adenocarcinoma in the left ovary. Subsequent vaginal hysterectomy revealed complex atypical hyperplasia in the endometrium. An extraovarian primary maelanoma could not be found. At this time the patient remains alive and well with no indication of recurrence.

Key words: Melanoma; Ovarian teratoma; Carcinoid; Endometioid adenoccarcinoma.

Introduction

Primary malignant melanoma of the ovary is very rare. Dermoid cysts are the most common sites of origin. Malignant transformation in dermoid cysts occurs in approximately 2% of cases [1], of which the majority (85%) are squamous cell carcinomas and adenocarcinomas [2].

Andrews first reported primary ovarian malignant melanoma in 1901 [3].

Case Report

A 49-year-old woman with a history of non insulin dependent diabetes mellitus (NIDDM) was referred by her GP to the University College London Hospital (UCLH) gynaecological cancer centre with a history of deliberate three stone weight loss but increasing abdominal distension. She had complained of slight lower abdominal pain and erratic menstruation for some time. The GP had organised an ultrasound (US) scan of the pelvis which demonstrated a complex ovarian cyst, measuring 34 cm x 30 cm x 34 cm and containing fat fluid and calcium, suggesting a diagnosis of a dermoid cyst. Clinical examination revealed a clinically obese woman weighing 117 kg. She had a grossly distended abdomen equivalent to 40 weeks of gestation with no demonstrable tenderness or shifting dullness. Blood tests included an elevated CA 125 of 149 and an elevated CA 19-9 of 192. The results of FBC, CEA, LDH, AFP, and β-HCG were all within normal range. A repeat US at UCLH demonstrated a poorly vascularised right ovarian cyst with appearances in keeping with a benign cystic teratoma and a simple left ovarian cyst.

The patient underwent a laparotomy and bilateral salpingo-oophorectomy. A large right ovarian cyst weighing 20 kg and measuring 30 cm x 40 cm x 50 cm was removed and the left ovary containing a small cyst was also removed. Peritoneal fluid was aspirated for cytology and subsequently found to be negative. The uterus was 10 cm long with two 2-cm fibroids noted but otherwise appeared normal.

The right ovary was sent for frozen section and was reported as a benign dermoid, obviating the need to proceed to a full staging laparotomy.

The histopathology of the paraffin section was as follows:

1) The right ovary showed an invasive malignant melanoma located in the sub epithelial tissue beneath thin squamous epithelium. The tumour depth was 1.7 mm and the horizontal extent was 8 mm. Cells had prominent nucleoli and melanin pigment was scattered among the cells. The adjacent squamous epithelium showed nests of atypical junctional melanocytic cells with features of melanoma in situ. There was no evidence of capsular or vascular invasion. The appearance was that of invasive malignant melanoma arising within a cystic teratoma.

2) The right ovary showed focally a circumscribed nodule, 3 mm in diameter revealing evidence of a carcinoid tumour of trabecullar pattern. The cells were strongly positive for synaptophysin and focally for chomogranin, and not penetrating the cyst wall.

3) The left ovary was multiloculated and cystic measuring 34 x 20 x 25 mm. Microscopically it showed evidence of grade 1 endometrioid adenocarcinoma with squamous differentiation associated with borderline endometrioid adenofibroma. No vascular or capsular invasion was noted.

After the diagnosis of a melanoma arising within the dermoid cyst was established the patient had a thorough ocular and dermatological examination. There was no evidence an extra-ovarian origin of the melanoma. CA 125 and CA 19.9 levels returned to normal after surgery.

Following a multi-disciplinary review of the pathology, the patient underwent a computed tomography (CT) position emission tomography (PET) scan and a CT scan of the chest, pelvis and abdomen. The CT scan showed no evidence of metastases but whole body CT PET showed fluorine 18 fluorodeoxyglucose (FDG) distribution normal throughout with the exception of a large and intensely FDG avid mass corresponding to the fundus of the uterus. There was no evidence of nodal or metastatic disease elsewhere.

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A vaginal hysterectomy was carried out to make a diagnosis. The histology showed complex atypical hyperplasia in the endometrium but no evidence of malignanat melanoma or carcinoma.

After review by a medical oncologist specialising in melanoma care, the patient was advised that adjuvant therapy was not indicated.

Discussion

Primary malignant melanoma of the ovary is very rare [4]. The ovaries normally contain no melanin-producing cells. Therefore the presence of teratoid elements in the ovary is necessary for an authentic case. All the tissues in a teratoma can undergo malignant change, most commonly squamous epithelium transforming into squamous carcinoma. Malignant melanoma is one of the rarest forms of this type of malignant transformation [5]. This case had a small focus of melanoma in a large dermoid cyst and was not surprisingly missed at frozen section.

It is important in cases of ovarian malignant melanoma to exclude other possible extra ovarian primary sites [6]. Our patient had a negative melanoma screen and the diagnostic criteria for an ovarian primary melanoma established by Cronje and Woodruff was fulfilled [7].

1) No other primary tumour.

2) Unilateral ovarian tumour with an associated teratoid element.

3) Good correlation of patient age and symptoms with those of the well documented cases in the literature.

4) Demonstration of melanocytic junctional activity (not mandatory for diagnosis).

The pattern of spread of primary ovarian malignant melanoma is like that of epithelial ovarian cancer plus lymphatic and haematogenous routes, involving the lymph nodes, lung, liver, and bone.

Surgery is the mainstay of treatment. The treatment of choice for ovarian melanoma is hysterectomy and bilateral salpingo-oophorectomy. The roles of adjuvant chemotherapy or immunochemotherapy have not been firmly established yet. There is limited evidence of increased survival. A case report by Vimla *et al.* showed that complete response can be achieved with dacarbazine and cisplatin [8] and a case report by Carlson and Wheeler demonstrated 5-year survival where cisplatin was used [9].

A previous review of 31 cases between 1901 and 2002 showed that 43% of women died within 18 months of diagnosis and only one case had no evidence of disease five years after diagnosis [10].

It was assumed that this was a Stage 1a tumour as there was no evidence of vascular or capsular invasion, the peritoneal fluid aspiration was negative, and the CT PET was negative apart from the focus on the uterus.

It was felt that the risks of formal staging (which would have included omentectomy and node dissection) outweighed the benefits, and a vaginal hysterectomy was performed to exclude simultaneous endometrial carcinoma which can occur in 15% of cases of endometrioid ovarian cancer [11, 12].

This is an unusual case with multiple pathologies. The findings here of a carcinoid tumour in the same dermoid cyst as a melanoma have not been reported previously. The number of reported cases of primary malignant melanoma of the ovary is small so we feel this case contributes to the world literature.

At this time the woman is alive and well with no indication of recurrence.

References

[1] Peterson W.F.: "Malignant degeneration of benign cystic teratomas of the ovary; a collective review of the literature". *Obstet. & Gynecol. Survey.,* 1957, *12,* 793.

[2] Climie A.R., Heath L.P.: "Malignant degeneration of benign cystic teratomas of the ovary. Review of the literature and report of a chondrosarcoma and carcinoid tumor". *Cancer,* 1968, *22,* 824.

[3] Andrews H.: "Primary melanotic sarcoma of the ovary". *Trans. Obstet. Soc.* (London), 1901, *43,* 228.

[4] Boscaino A., D'Antonio A., Orabona P., Tornillo L., Staibano S., De Rosa G.: "Primary malignant melanoma of the ovary". *Pathologica,* 1995, *87,* 685.

[5] Takubo K., Kimura T., Suzuki K., Ono K., Tsukahara K., Okura F. *et al.*: "Malignant melanoma arising in ovarian cystic teratoma". *Gynecol. Oncol.*, 1991, *43*, 77.

[6] Young R.H., Scully R.E.: "Malignant melanoma metastatic to the ovary. A clinicopathologic analysis of 20 cases". *Am. J. Surgical Pathol.,* 1991, *15,* 849.

[7] Cronje H.S., Woodruff J.D.: "Primary ovarian malignant melanoma arising in cystic teratoma". *Gynecol. Oncol.,* 1981, *12,* 379.

[8] Vimla N., Kumar L., Thulkar S., Bal S., Dawar R.: "Primary malignant melanoma in ovarian cystic teratoma". *Gynecol. Oncol.,* 2001, *82*, 380.

[9] Carlson J.A. Jr., Wheeler J.E.: "Primary ovarian melanoma arising in a dermoid Stage IIIc: long-term disease-free survival with aggressive surgery and platinum therapy". *Gynecol. Oncol.,* 1993, *48,* 397.

[10] McNeilage L.J., Morgan J., Constable J., Jobling T.W.: "Metastatic malignant melanoma arising in a mature ovarian cystic teratoma: a case report and literature review". *Int. J. Gynecol. Cancer*, 2005, *15*, 1148.

[11] Eisner R.F., Nieberg R.K., Berek J.S.: "Synchronous primary neoplasms of the female reproductive tract". *Gynecol. Oncol.*, 1989, *33,* 335.

[12] Storey D.J., Rush R., Stewart M., Rye T., Al-Nafussi A., Williams A.R. *et al.*: "Endometrioid epithelial ovarian cancer: 20 years of prospectively collected data from a single center". *Cancer*, 2008, *112*, 2211.

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