Gynecol Surg (2011) 8:197–199
DOI 10.1007/s10397-009-0488-0

COMMUNICATION

Ovarian cancer and Mayer–Rokitansky–Kuster–Hauser syndrome

Andreas Kavallaris · Khalid H. Sait · Ehab Abu Marar · Rafat Abu Shakra · Klaus Diedrich

Received: 1 March 2009 / Accepted: 1 April 2009 / Published online: 23 April 2009

Abstract 48-year-old woman with Mayer–Rokitansky–Kuster–Hauser (MRKH) syndrome, right kidney aplasia, a pelvic-abdominal mass, and an elevated CA-125 level underwent bilateral salpingo-oophorectomy, omentectomy, and debulking for a presumed ovarian carcinoma. Intraoperative findings included a pelvic tumor on the surface of both ovaries. Pathological examination revealed a poorly differentiated ovarian carcinoma, mixed type, mainly of transitional and serous types, with minor components of clear cell and mucinous patterns. A stage III ovarian epithelial carcinoma, mixed type was diagnosed. The patient was treated with Paclitaxel and Carboplatin and was asymptomatic 24 months postoperatively. Rarely, ovarian carcinoma may be associated with MRKH syndrome.

Keywords Mayer–Rokitansky–Kuster–Hauser (MRKH) syndrome · Ovarian cancer

Introduction

Mayer–Rokitansky–Kuster–Hauser (MRKH) syndrome has recently been subdivided into two types: type I, isolated or Rokitansky sequence, and type II, Mullerian duct aplasia, unilateral renal agenesis, and cervical somite anomalies (OMIM 601076). Mayer–Rokitansky–Kuster–Hauser syndrome is also referred to as congenital absence of the uterus and vagina, genital renal ear syndrome, or Mullerian aplasia.

Mayer–Rokitansky–Kuster–Hauser syndrome is characterized by congenital aplasia of the uterus and the upper two thirds of the vagina in women showing normal developmental of secondary sexual characteristics and a normal 46, XX karyotype [1]. Ovarian function is normal and can be documented with basal body temperatures or peripheral levels of progesterone. Growth and development are also normal [2].

Type II MRKH syndrome is more frequently seen than type I, taking into consideration that the incidence is about 1 in 4,500 female births for both types [3]. The incidence might be underestimated in certain areas of the world due to some religious, cultural, and social reasons as well as a lack of knowledge about MRKH syndrome.

Sporadic cases of MRKH syndrome are more frequently seen, although family cases have also been described. The inheritance mode appears to be of the autosomal dominant type [4]. Although various malformations are associated with MRKH syndrome, an association between MRKH syndrome and ovarian cancer could be found.

An ovarian carcinoma should be included in the differential diagnosis of a woman with Mayer–Rokitansky–Kuster–Hauser syndrome presenting with abdominal pain, distention, and an elevated CA-125 level.

A. Kavallaris (✉) · K. Diedrich
Department of Gynecology and Obstetrics,
UK-SH Campus Luebeck,
Luebeck, Germany
e-mail: andreas.kavallaris@uk-sh.de

K. H. Sait · E. A. Marar · R. A. Shakra
International Medical Center,
Jeddah, Saudi Arabia

Case report

A 48-year-old woman, with a known case of MRKH syndrome and right kidney aplasia presented with complaints of abdominal pain, distention, and a size increment of 1-month duration with no other associated symptoms. A review of systems was unremarkable and the medical and surgical histories were negative.

On examination, the patient appeared well, with no signs of pallor, dehydration, or pain. She had a normal neck appearance and size. The chest examination revealed good air entry into both lungs and normal S1 and S2 heart sounds. Her abdomen was distended by a mass (pelvic-abdominal) that reached the umbilical level, although there were no skin changes, organomegaly, or pain noticed on palpation. There also was no inguinal, axillary, supraclavicular, or submandibular lymphadenopathy detected. Her external genitalia were grossly normal. As the patient knew she had a vaginal dimple, she was counseled before to be operated for a neovagina but she refused and she refused a vaginal examination. There also was no upper or lower limb edema noticed and musculoskeletal and neurological findings were normal. Ultrasound showed massive ascites and CT scan confirm the presence of large omental cake and absent of right kidney. A chest radiograph showed a moderate left-sided pleural effusion. The CA-125 level was elevated (900 U/ml), although levels of other tumor markers, such as alpha-fetoprotein, beta human chorionic gonadotropin, lactate dehydrogenase, and carcinoembryonic antigen were normal. The patient was counseled regarding the evidence of cancer and subsequently provided informed consent to undergo the operation of bilateral salpingo-oophorectomy, omentectomy, and debulking.

The intraoperative findings were as follows: (1) ascites, (2) a large omental cake with peritoneal deposits, and (3) a pelvic tumor on the surface of both ovaries. Bilateral salpingo-oophorectomy, omentectomy, and debulking were performed.

In regard to pathological findings, grossly the two resected ovaries measured 10.0×3.0×2.0 cm and 8.0×3.0×1.5 cm. The surface of both ovaries revealed multiple papillary growths. The omental biopsy specimen measured 22.0×20.0×7.0 cm. It showed multiple, variably sized, firm whitish nodules and foci of necrosis. Microscopically, both ovaries and the omentum revealed a malignant neoplasm with variable growth patterns (long papillary fronds with fibrovascular cores, solid sheets, and occasional glands) (Fig. 1). The cells within the papillary fronds displayed a moderate degree of nuclear atypia, while the cells in the solid sheaths revealed marked nuclear atypia and abnormal mitotic figures (Fig. 2). Occasional intracytoplasmic hyaline globules, which were periodic acid-Schiff (PAS)-positive and diastase-resistant, were identified (Fig. 3). A mucicarmine stain revealed luminal staining in occasional glands detected. The final diagnosis was a poorly differentiated ovarian carcinoma, mixed type, mainly of transitional and serous types (both forming 90% of the tumor) with minor components of clear cell and mucinous patterns. According to the previous findings, stage III ovarian epithelial carcinoma, mixed type was diagnosed.

The patient left the hospital 4 days later in a good general condition after an uneventful postoperative period; the recommendations were that she receives treatment with Taxol (Paclitaxel) and Carboplatin. The patient underwent the recommended treatment and was found to be free of complaints and symptoms for a period of 24 months postoperatively.

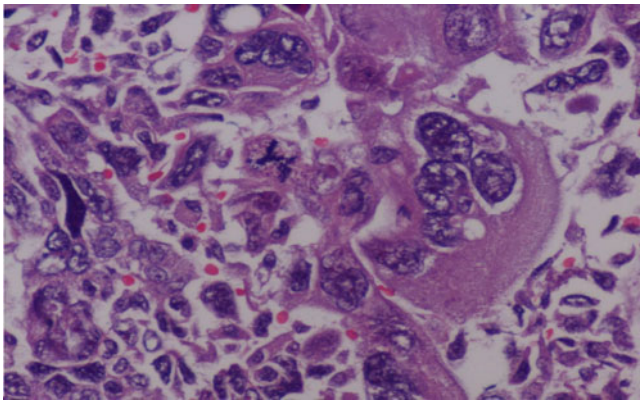

Fig. 2 High power magnification of the solid areas showing marked nuclear atypia and abnormal mitosis

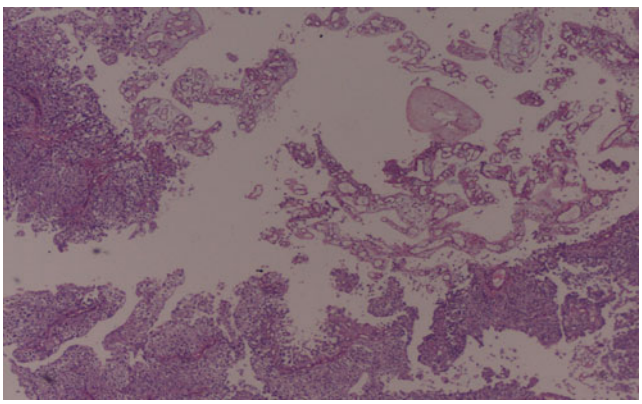

Fig. 1 The tumor in the ovary is composed mainly of transitional cell carcinoma with a tall papillary arrangement

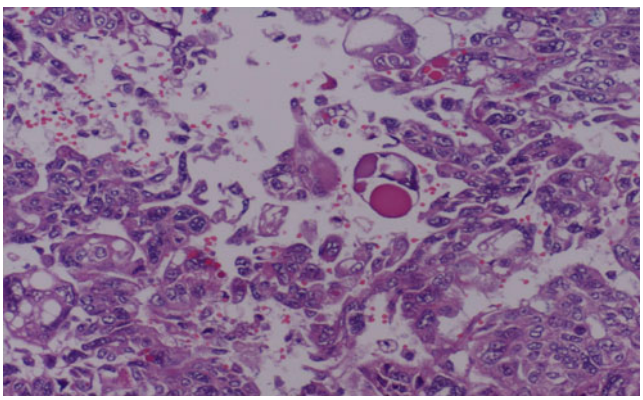

Fig. 3 High power magnification showing scattered intracytoplasmic hyaline globules, which were PAS-positive, diastase-resistant

Discussion

Mayer–Rokitansky–Kuster–Hauser syndrome is considered to be one of the most frequent causes of primary amenorrhea due to uterine agenesis. Individuals with complete uterine agenesis have a 46 XX karyotype, normal ovaries with regular cyclic ovulation, normal endocrine function, and normal breast, pubic, and axillary hair development but a shortened or absent vagina in addition to an absent uterus, this was typically seen in our patient. The overwhelming majority of these disorders are due to an isolated developmental defect, but on occasion the condition is genetically inherited [5, 6]. Familial aggregates of the most common disorders of Mullerian differentiation in females—Mullerian aplasia and incomplete Mullerian fusion—are best explained on the basis of polygenic and multifactorial inheritance [4].

Skeletal and urological anomalies are usually found in females with MRKH syndrome but in varying degrees of involvement. A few cases of MRKH syndrome associated with a dysgerminoma, a myoma, adenomyosis, or an immature teratoma have been published, but no cases of MRKH syndrome associated with an ovarian mixed epithelial tumor have been reported [7–9]. Although Ghirardini also reported a case of MRKH having ovarian cancer [7] an association which might coexist, others talked about the presence of ovarian neoplasm risk and MRKH [8].

By definition, ovarian mixed epithelial tumors are those tumors that are composed of an admixture of two or more of the five major cell types: serous, mucinous, endometrioid, clear cell, and Brenner/transitional. The second and third cell types must comprise alone or together at least 10% of the tumor epithelium, or, in the case of a mixed Brenner–mucinous cystic tumor, both components should be macroscopically visible. A mixed epithelial tumor may be benign, borderline, or malignant. The reported incidence of mixed epithelial tumors varies from 0.5–4% of surface epithelial-stromal tumors [10]. In our case, the tumor was poorly differentiated and composed mainly of transitional cell carcinoma (forming 70% of the tumor) followed by serous carcinoma (forming 20% of the tumor) with minor components of clear cell and mucinous carcinoma types (both forming 10% of the tumor).

Transitional cell carcinoma of the ovary usually occurs in a pure form, but it is also common as a component of a surface epithelial carcinoma of mixed cell type. Eichhorn and Young reported 23 cases of transitional cell carcinoma of the ovary mixed with other types of surface epithelial tumors. In the majority of cases (16 cases), the transitional cell carcinoma was mixed with serous adenocarcinoma [11]. As far as we know, this is the first case of an ovarian mixed epithelial carcinoma reported in a patient with known MRKH syndrome, but according to all that was found and mentioned by us and the others, we do recommend the exclusion of ovarian carcinoma in cases of MRKH as they might coexist especially in suggestive cases which present with abdominal pain, distention, and an elevated CA-125 level.

References

1. Morcel K, Camborieux L, Programme de Recherches sur le Aplasies, Mulleriennes, Guerrier, D (2007) Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome. Orphanet J Rare Dis 2:13. Review
2. Speroff L, Glass RH, Kase NG (1999) Clinical gynecologic endocrinology and infertility. 6th. ed. Lippincott Williams & Wilkins, 441–442.
3. Griffin JE, Edwards C, Madden JD, Harrod MJ, Wilson JD (1976) Congenital absence of the vagina, the Mayer-Rokitansky-Kuster-Hauser syndrome. Ann Intern Med 685:224–236
4. Simpson JL (1999) Genetics of the female reproductive ducts. Am J Med Genet 89:224–239
5. Berek JS (2002) Novak's Gynecology 13th ed. Lippincott Williams & Wilkins, 805–838.
6. Stenchever MA, Droegemueller W, Herbst AL, Mishell DR (2001) Comprehensive Gynecology 4th Ed. Mosby, 253–268, 1107.
7. Ghirardini G, Magnani A (1995) Mayer-Rokitansky-Kuster-Hauser syndrome and ovarian cancer. Report of a case. Clin Exp Obstet Gynecol 22:247–248
8. Mishina A, Gladun E, Petrovici V, Iakovleva I (2007) Ovarian dysgerminoma in Mayer-Rokitansky-Kuster-Hauser syndrome. Eur J Obstet Gynecol Reprod Biol 131:105–106
9. Koonings PP, al-Maryati L, Schlaerth JB, Lobo RA (1991) Mayer-Rokitansky-Kuster-Hauser syndrome associated with endodermal sinus tumor of the ovary. Fertil Steril 56:577–578
10. Kurman RJ (2002) Blaustein's pathology of the female genital tract 5th Ed; 1234
11. Eichhorn JH, Young RH (2004) Transitional cell carcinoma of the ovary: a morphologic study of 100 cases with emphasis on differential diagnosis. Am J Surg Pathol 28(4):453–463