Squamous cell carcinoma developing in a huge dermoid cyst of the ovary in an 80-year-old woman - case report

A. Başgül[1], *Consulting M.D.*; **H. Gökaslan**[1], *Assoc. Prof., M.D.*;
Z.N. Kavak[1], *Prof., M.D.*; **N. Güdücü**[2], *Consulting M.D.*; **F. Eren**[3], *Assoc. Prof., M.D.*

[1]*Department of Obstetrics and Gynecology,* [2]*Department of Obstetrics and Gynecology, Bilim University;*
[3]*Department of Pathology, Marmara University School of Medicine, Istanbul (Turkey)*

Summary

A case of an 80-year-old patient with squamous cell carcinoma originating from a huge septated dermoid cyst of the right ovary is reported. There were bilateral dermoids in the patient. The tumor sizes were 30 x 40 x 20 cm and 4 x 3 x 5 cm in the right and left ovary, respectively, confirmed by ultrasound and computed tomography. Squamous cell carcinoma arose in the solid part of a huge dermoid cyst of the left ovary. Total abdominal hysterectomy and bilateral salpingo-oophorectomy, omentectomy and appendectomy were performed. The tumor was confined to the right ovary. The patient was categorized as FIGO Stage IA. She recovered uneventfully and there was no evidence of recurrence in the early-stage case during one year of follow-up.

The clinical and pathological features, treatment modalities and prognosis of squamous cell carcinoma are described.

Key words: Dermoid cyst; Squamous cell carcinoma; Prognosis.

Introduction

Dermoid cyst or benign cystic teratoma is one of the most common tumors in women during reproductive life. This type of tumor usually grows slowly and causes minimal symptoms until it is large or complications occur. Among various complications including torsion, rupture, etc., the most dreadful is malignant transformation [1]. However, malignant transformation developing from a dermoid cyst is rare and is reported as occurring in 1-2% of all cases [2, 3]. This malignant transformation is found in patients in their 50s and 60s and usually presents with advanced disease [4, 5]. Approximately 80% of malignant tumors arising in dermoid cysts are squamous cell carcinomas (SCC). The prognosis tends to be very poor especially in advanced stages [1, 3, 6]. Because of its rarity the surgical and postoperative management of this uncommon germ cell malignancy are not well established [3, 7, 8].

We report the case of an elderly patient with early-stage squamous cell carcinoma in a huge septated dermoid cyst of the right ovary. The clinical and pathological features, treatment modalities and prognosis of SCC which developed into a mature cystic teratoma of the ovary are described.

Case Report

An 80-year-old woman, gravida 4, para 3, abortus 1 was referred to our clinic with the diagnosis of a bilateral ovarian mass. She presented with a 3-month history of abdominal discomfort and dyspepsia. Transabdominal ultrasound revealed a right ovarian septated cystic mass measuring 28 x 16 cm and a left ovarian 3 x 4 cm cystic mass. Abdominal computed tomography confirmed the diagnosis of a bilateral ovarian mass. She had been postmenopausal for 33 years. A chest X-ray was normal. Complete blood count, serum electrolytes, and biochemical profile were normal. Among tumor markers analyzed, while CA125 was slightly elevated to 46.18 U/ml (normal range below 35 U/ml), CEA, CA19-9 and CA15-3 were normal. The patient underwent exploratory laparotomy and total abdominal hysterectomy together with bilateral salpingo-oophorectomy, omentectomy and appendectomy. The omentum, liver, and diaphragm were normal. There was no ascites nor retroperitoneal lymphadenopathy. The resected specimen consisted of a huge round cyst measuring 30 x 25 x 20 cm in diameter and weighing 2,750 g. The external surface was smooth and translucent. On sectioning the tumor was bilocular and filled with greyish yellow sebaceous material and hair. The tumors were bilateral and appeared grossly as a large cystic cavity with a polypoid intracystic mass. The frozen-section diagnosis was mature cystic teratoma (dermoid) with malignant transformation. Microscopic sections showed squamous cell carcinoma in continuity with areas of carcinoma in-situ. In other parts the cyst was lined by attenuated squamous epithelium (Figure 1 A, B and C). Squamous cell carcinoma arose in the solid part of a huge dermoid cyst of the left ovary. Peritoneal cytology was negative for malignant cells. SCC was confined to the right ovary and the surgical margins were intact. She was placed in FIGO Stage I A.

The patient recovered uneventfully, has been followed-up as an outpatient and has remained in good health for almost one year with no signs of recurrence or metastasis.

Discussion

Mature teratomas of the ovary (e.g., dermoid cysts) are very common tumors. They represent approximately 10% to 15% of all ovarian tumors and are bilateral in 10% to 20% of the cases [8, 9]. They derive from a single germ cell and generate tissue from the ectoderm, mesoderm and endoderm and almost always microscopically show skin and skin adnexa with rich deposition in the cystic

Revised manuscript accepted for publication September 21, 2006

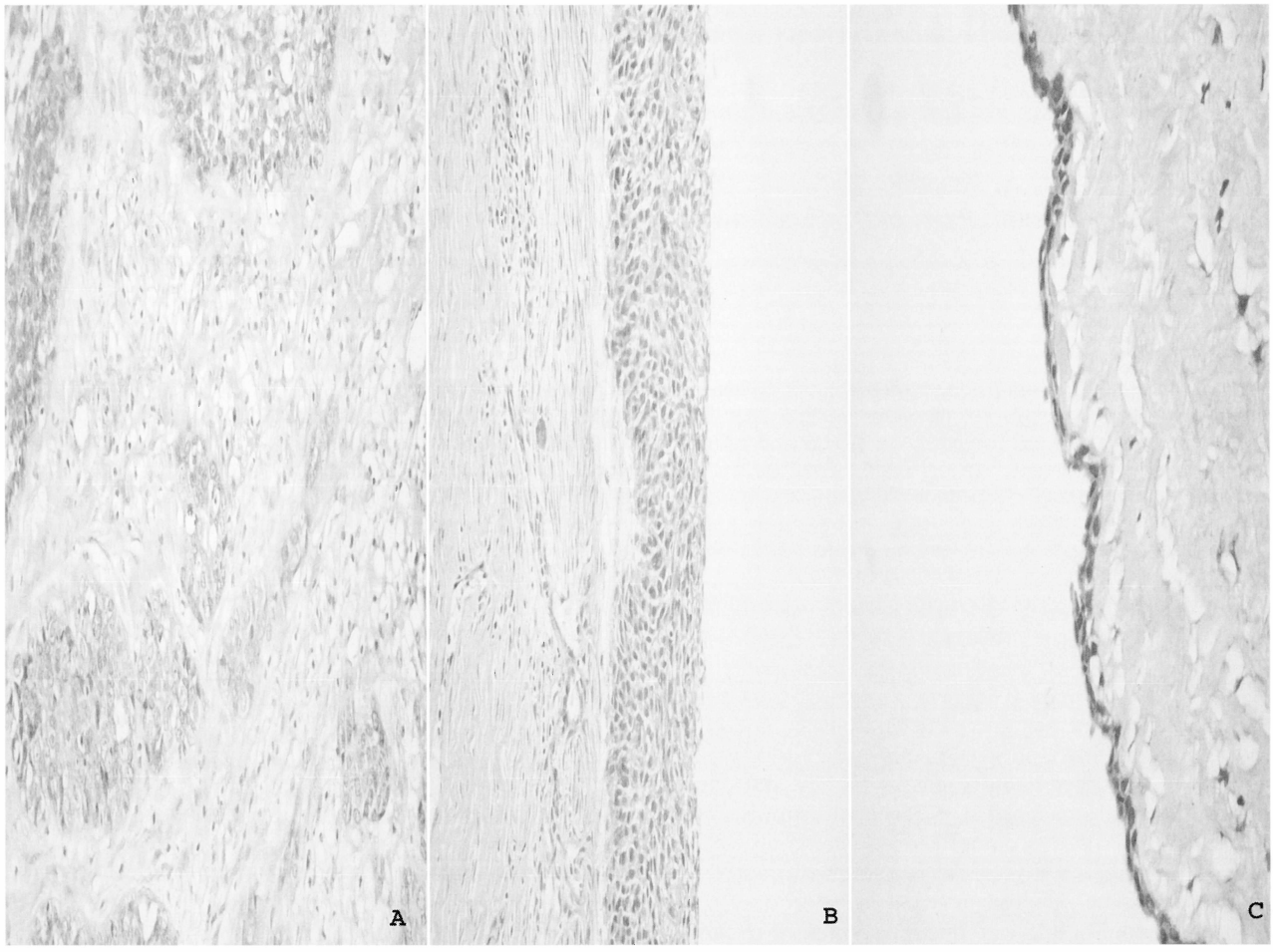

Figure 1. — A. Areas of squamous cell carcinoma (H&E x 200); B. Carcinoma in-situ (H&E x 100); C. Attenuated squamous epithelium (H&E x 40).

tumor of sebaceous material, keratin flakes, and hair [9, 10]. Although usually benign, a few may exhibit (about 1% to 2%) malignant degeneration, 80% of these being invasive squamous cell carcinomas with a few adenocarcinomas and on very rare occasions, malignant melanomas [11, 12]. Malignancies in dermoid cysts account for more than 1% of all ovarian cancers [13]. The frequency of malignant degeneration of dermoids is related to age, with the highest incidence in the postmenopausal years [3-5]. Our patient had been postmenaupausal for 33 years. The oldest patient ever reported was 87 years old [3]. However, young age does not guard against the disease since there have been reported cases of patients in their 20s [6, 14]. Thus, a frozen section of a dermoid cyst especially in older ages may improve detection of this complication allowing a more accurate staging [4]. We detected the diagnosis in the frozen section as well. Although SCC is the most common cancer arising from dermoid cysts, its occurrence is still so rare that most surgeons hardly ever recognize its existence pre- or intraoperatively [1]. The patients may be asymptomatic or have symptoms of abdominal distention or bloated abdomen, as those caused by benign cysts. Others may display a history of rapid growth accompanied by pain [2, 6]. In some other cases, various symptoms due to invasion of adjacent organs are the presenting complaints, such as gastrointestinal symptoms of constipation or diarrhea or both in alternation, rectal bleeding [6, 15], or rarely as bone pain from a metastatic tumor [6]. Other nonspecific signs of wasting disease such as weight loss or cachexia may be found in advanced cases [1]. In our case the patient presented with gastrointestinal symptoms, mainly dyspepsia. Squamous cell carcinoma arising from a mature cystic teratoma is a rare pathologic event that is not diagnosed preoperatively [8]. Imaging studies might aid in preoperative diagnosis [1]. Kido in 1999 reviewed magnetic resonance imaging findings to differentiate benign dermoid cysts and the arising malignant tumor [16]. In dermoid cysts, the content is fatty fluid with hair balls and a smooth surface while malignant tumors, which may still have the features of dermoid cysts, also have an area of solid component with contrast enhancement. Transmural extension and irregular invasion through the septa to the peritoneal area might be found. Emoto *et al.* in 2000 demonstrated from Doppler ultrasonography that malig-

nant tumors have a higher intratumoral blood flow and lower mean resistance index and pulsatility index than benign ones [17]. Due to its rarity, the surgical and postoperative treatment of this malignancy are not well established in the literature [1, 8]. The prognosis of SCC arising in a dermoid cyst depends on the degree of penetration of the tumor. Prognosis is poor when the disease has spread beyond the ovary [8]. Although poor prognosis has been reported in advanced stages, an aggressive approach with cisplatinum-based chemotherapy, radiation and even with secondary cytoreduction, long-term remission may be achieved [1, 4]. Like early-stage ovarian cancer some Stage I patients may not require postoperative therapy [8]. Adequately staged patients with disease confined to the ovary have a 5-year survival of 95-100% [3, 12]. In Stage I, when the tumor was limited only to the ovary, there were cases when adjuvant chemotherapy was given [18] and those which were just being observed and followed-up [19, 20]. We chose to follow-up our patient after the operation without giving any other adjuvant therapy as the cancer was limited to the ovary. According to Peterson's review, only three of 177 patients survived for five years or longer when metastases were apparent or the cyst was ruptured [21]. Seltzer and Vogl's report of a Stage II patient with squamous cell carcinoma arising from a dermoid cyst with metastasis to the bladder peritoneum, who was disease-free after pelvic radiation therapy and subsequent platinum-based chemotherapy, suggests that these modalities are effective either alone or in combination [22]. However, 12 of 13 Stage III patients in the series reported by Kikkawa *et al.* died within 20 months, despite the fact that six of them were treated with cisplatin or cisplatin-based combination chemotherapy [3]. The one living patient with Stage III in that series was followed for only two months.

There are only a few patients reported in the literature with Stage III squamous cell carcinoma arising in a dermoid cyst of the ovary who have had prolonged disease-free survival [8].

Pins *et al.* reported 19 SCCs associated with a SCC dermoid cyst of which three of the carcinomas were in situ and seven, six, and three tumors were Stages I, II, and III, respectively. The tumors and associated dermoid cysts were 6-35 cm in the greatest dimension, usually forming mural nodules with intracavitary protrusion and focal necrosis and hemorrhage [6].

Yakushuji *et al.* reported 145 cases with cystic teratoma, and malignant degeneration was seen in seven (4.8%) in a ten-year period. Their age distribution was from 43 to 78 years. The malignant degeneration was squamous cell carcinoma in all of the cases. In their prognoses three out of seven cases died but the remaining four have survived from four to ten years [23].

Tangjitgamol *et al.* reported a Stage III patient who had suboptimal surgery and responded partially to chemotherapy. She subsequently progressed after cessation of the drug, and finally died within a year after diagnosis [1]. Although debulking surgery definitely has an advantage in the treatment of this malignancy, the situation for the best adjuvant therapy is still not clear. In more advanced stages, various treatments such as different chemotherapeutic regimens and/or radiation therapy have been used with varied outcomes [6, 14, 15, 24-26].

Conclusion

Firstly, the surgeon should keep this rare type of tumor in mind when faced with the prospect of operating on a dermoid cyst, especially in older-aged patients. Secondly, although many authors have documented the use of a combination of chemotherapy and/or radiation, morbidity is increased from the side-effects. Therefore, the optimal treatment of this cancer should be individualized based on the clinical findings of patients and the experience of the care providers, especially in early stages.

References

[1] Tangjitgamol S., Manusirivithaya S., Sheanakul C., Leelahakorn S., Thawaramara T., Jesadapatarakul S.: "Squamous cell carcinoma arising from dermoid cyst: Case reports and review of literature". *Int. J. Gynecol. Cancer*, 2003, *13,* 558.

[2] Stamp G.W.H., McConnell E.M.: "Malignancy arising in cystic ovarian teratomas. A report of 24 cases". *Br .J .Obstet. Gynaecol.,* 1983, *90,* 671.

[3] Kikkawa F., Ishikawa H., Tamakoshi K., Nawa A., Suganuma N., Tomoda Y.: "Squamous cell carcinoma arising from mature cystic teratoma of the ovary: a clinicopathologic analysis". *Obstet. Gynecol.,* 1997, *89,* 1017.

[4] Ayhan A., Tuncer Z.S., Bilgin F., Kucukali T.: "Squamous cell carcinoma arising in dermoid cyst". *Eur. J. Gynaecol. Oncol.,* 1996, *17,* 144.

[5] Kashimura M., Shinohara M., Hirakawa T., Kamura T., Matsukuma K.: "Clinicopathologic study of squamous cell carcinoma of the ovary". *Gynecol. Oncol.*, 1989, *34,* 75.

[6] Pins M.R., Young R.H., Daly W.J., Scully R.E.: "Primary squamous cell carcinoma of the ovary. A report of 37 cases". *Am. J. Surg. Pathol.,* 1996, *20,* 823.

[7] Krumerman M.S., Chung A.: "Squamous carcinoma arising in benign cystic teratoma of the ovary". *Cancer,* 1977, *39,* 1237.

[8] Powell J.L., Stinson J.A., Connor G.P., Shiro B.S., Mattison M.: "Squamous cell carcinoma arising in a dermoid cyst of the ovary". *Gynecol. Oncol.*, 2003, *89,* 526.

[9] Linder D., McCaw B.K., Hecht F.: "Parthenogenic origin of benign ovarian teratomas". *N. Engl. J. Med.,* 1975, *9,* 63.

[10] Tobon H., Surti U., Naus G.J., Hoffner L., Hemphill R.W.: "Squamous cell carcinoma in situ arising in an ovarian mature cystic teratoma. Report of one case with histopathologic, cytogenetic, and flow cytometric DNA content analysis". *Arch. Pathol. Lab. Med.,* 1991, *115,* 172.

[11] Christopherson W.A., Councell R.B.: "Malignant degeneration of a mature ovarian teratoma". *Int. J. Gynaecol. Obstet.,* 1989, *30,* 379.

[12] Hirakawa T., Tsuneyoshi M., Enjoji M.: "Squamous cell carcinoma arising in mature cystic teratoma of the ovary. Clinicopathologic and topographic analysis". *Am. J. Surg. Path.*, 1989, *13,* 397.

[13] Peuchmaur M., Reynes M.: "Squamous cell carcinoma in situ developing in dermoid cyst of the ovary. Report of a case with laminin immunohistochemical staining demonstrating basement membrane integrity". *Pathol. Res. Pract.,* 1989, *185,* 251.

[14] Zorlu C.G., Kuscu E., Soysal M.E., Caglar T., Aydogdu T., Cobanoglu O. *et al.*: "Malignant degeneration of mature cystic teratomas". *Aust. NZ. J. Obstet. Gynaecol.*, 1996, *36,* 221.

[15] Lee Y.C., Abulafia O., Montalto N., Holcomb K., Matthews R., Golub R.W.: "Malignant transformation of an ovarian mature cystic teratoma presenting as a rectal mass". *Gynecol. Oncol.,* 1999, *75,* 499.

[16] Kido A., Togashi K., Konishi I., Kataoka M.L., Koyama T., Ueda H. *et al.*: "Dermoid cysts of the ovary with malignant transformation". *Am. J. Roentgenol.*, 1999, *172,* 445.
[17] Emoto M., Obama H., Horiuchi S., Miyakawa T., Kawarabayashi T.: "Transvaginal color Doppler ultrasonic characterization of benign and malignant ovarian cystic teratomas and comparison with serum squamous cell carcinoma antigen". *Cancer,* 2000, *88,* 2298.
[18] Kimura T., Inoue M., Miyake A., Tanizawa O., Oka Y., Amemiya K. *et al.*: "The use of serum TA-4 in monitoring patients with malignant transformation of ovarian mature cystic teratoma". *Cancer,* 1989, *64,* 480.
19.Ribeiro G., Hughesdon P., Wiltshaw E.: "Squamous carcinoma arising in dermoid cysts and associated with hypercalcemia: a clinicopathologic study of six cases". *Gynecol. Oncol.*, 1988, *29*, 222.
[20] Tseng C.J., Chou HH., Huang K.G., Chang T.C., Liang C.C., Lai C.H. et al.: "Squamous cell carcinoma arising in mature cystic teratoma of the ovary". *Gynecol. Oncol.*, 1996, *63,* 364.
[21] Peterson W.F.: "Malignant degeneration of benign cystic teratomas of the ovary: a collective review of the literature". *Obstet. Gynecol.*, 1957, *12,* 793.
[22] Seltzer V., Vogl S.: "Stage II benign cystic teratoma with malignant squamous degeneration". *NY State J. Med.*, 1985, *85,* 224.
[23] Yakushiji M., Nishida T., Sugiyama T., Mitamura T., Natsuaki Y., Nagano H. *et al.*: "Malignant degeneration of benign cystic teratomas of the ovary". *Acta Obstet. Gynaecol. Jpn.,* 1981, *33,* 1095.
[24] Rose P.G., Tak W.K., Reale F.R.: "Squamous cell carcinoma arising in a mature cystic teratoma with metastasis to the paraaortic nodes". *Gynecol. Oncol.*, 1993, *50,* 131.
[25] Mayer C., Miller D.M., Ehlen T.G.: "Peritoneal lmplantation of squamous cell carcinoma following rupture of a dermoid cyst during laparoscopic removal". *Gynecol. Oncol.*, 2002, *84*, 180.
[26] Okada S., Ohaki Y., Inoue K., Nakajo H., Kawamata H., Kumazaki T.: "A case of dermoid cyst of the ovary with malignant transformation complicated with small intestinal fistula formation". *Radiat. Med.,* 2005, *23,* 443.

Address reprint requests to:
A. BASGUL, M.D.
Abide-i Hurriyet Cad. No.: 144
Ruyam Palas Apt.
Kat: 3, D: 10
35381 Sisli, Istanbul (Turkey)