Krukenberg Tumor: Report of Six Cases

Abstract

Introduction: The Krukenberg tumor is a rare malignant tumor of the ovary, accounting from 1% to 2% of all ovarian tumors. It is usually but not always a bilateral involvement of ovaries from metastatic deposit from adenocarcinoma of stomach, and rarely from other gastrointestinal (GI) and non GI organs.

Patients and methods: We report a series of 6 patients with Krukenberg tumors treated at the Casablanca University Hospital between January 2008 and November 2014.

Results: Mean age of the patients was 46 years; digestive signs predominated over pelvic signs. Bilateral forms were more frequent. Surgical treatment and palliative chemotherapy were given. The histological diagnosis is based on the presence of signet-ring cells associated with a pseudo sarcoma stroma. The primary tumor was found in all of the cases. The prognosis was unfavorable due to late diagnosis.

Conclusion: Krukenberg tumor is an ovarian metastasis of digestive tract cancer. The only hope for improved prognosis is to search for ovarian metastasis in all cases and prophylactic ovariectomy in women over 40 with digestive tract cancer.

Keywords: Krukenberg tumor; Metastatic gastric adenocarcinoma; Signet ring cell gastric carcinoma; Palliative chemotherapy; Surgery

Mini Review

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Abbreviations: GI: Gastro-Intestinal; CA 125: Cancer Antigen 125; CT Scan: Computerized Tomography

Introduction

Krukenberg tumor is an ovarian adenocarcinoma metastasis from a primary malignancy of the gastrointestinal tract with 76% originating from the stomach; it is bilateral in 80% of the cases [1]. It was first described by Krukenberg in 1896 who called it "fibrosarcoma microcellulare carcinomatodes [2], or "sarcoma ovary mucocellulare."Finally, in 1960, Novak described this tumor as in filtered mucinocarcinoma with peripheral signet ring cells which sometimes will be observed with glandular structures [3]. The aim of this work is to report from 6 cases collated in the department of Gastroenterology, of Hospital Ibn Rochd of Casablanca, epidemiological, clinical, evolutionary and therapeutic features.

Results

The average age of our patients was 46 years (range 37 -61 years), four patients (66, 67 %)

were premenopausal, and two (33, 33%) were post-menopausal, upon admission, all patients had an increase the volume of the abdomen with an abdominal pain. Two of the patients had pelvic pain; three of the patients had complaints of nausea and vomiting. The clinical examination found a pelvic mass in two patients, ascites in all patients and deterioration of general condition in five patients. The ultrasound and abdominopelvic CT scan found an ovarian tumor size and echo texture variable, unilateral in 2 cases (Figure1), bilateral in 4 cases (Figure 2), with ascites abundance. The esophago-gastro-duodenal fibroscopy found an ulcerative budding in the antrum in three cases, an ulcer in the greater curvature in one case, burrowing ulcer in the lesser curvature in one case, normal in one case. Colonoscopy performed found a tumor of the transverse colon in one case and was normal in 5 cases. Histological study of gastric lesions was in favor of gastric adenocarcinoma, and colon tumor was in favor of a colonic adenocarcinoma. CA 125 was high in all of our patients. Exploratory laparotomy was performed in all our patients, only two patients underwent radical surgery consisting of a total hysterectomy without adnexal and oophorectomy, the remaining four patients had biopsy because of the advanced local. The histology of the resected or biopsy confirmed the diagnosis of Krukenberg tumors. Chemotherapy was performed in only 2 patients, 4 other patients for this treatment could not be administered due to the alteration of the state generally. The overall survival in patients was 2, 33 months.

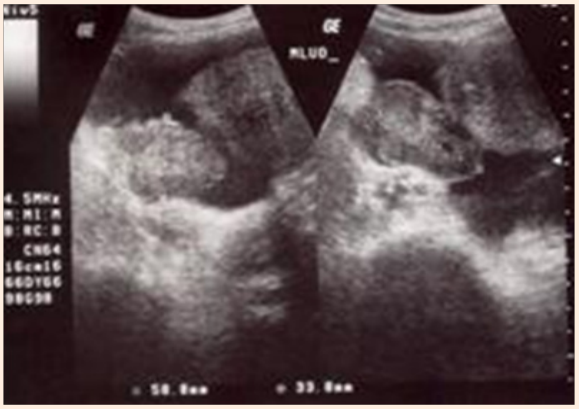

Figure 1: Pelvic ultra sonography: pelvic mass and ascites.

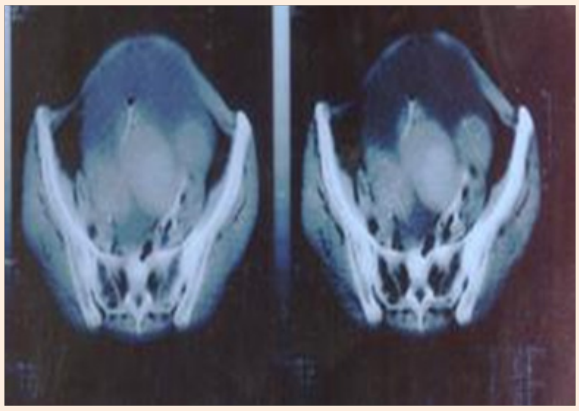

Figure 2: Bilateral ovarian tumor and ascites.

Discussion

Krukenberg tumor is a metastatic signet ring cell adenocarcinoma of the ovary. It is uncommon, accounting for 1% to 2% of all ovarian tumors [4]. A review of literature indicates that 35 to 45% of the patients were younger than 40 years of age, with an average range of 40 to 46 years [5]. The common presenting symptoms are related to the ovary and include abdominal pain and distension due to the bilateral, often large ovarian masses. In addition, ascites is a common presentation in the Krukenberg tumor and usually reveals malignant cells [4], in our series ascites is present in 100% of cases. Radiologically, Krukenberg tumors on abdominopelvic sonography and computed tomographic scan usually appear as bilateral ovarian masses such as the case in four of our patients. The masses are usually solid but can also be cystic [4]. A retrograde lymphatic spread is the most common route for the spread of metastasis of gastric carcinoma to the ovaries, less common pathways of metastasis to the ovary occur via the peritoneum and vasculature [6,7].

Microscopically, Krukenberg tumor was characterized by the presence of signet ring cells with eccentric nucleus, filled with mucus and a proliferation of stromal pseudosarcomatous. No optimal treatment strategy for Krukenberg tumors has been clearly established in the literature. Whether a surgical resection should be performed has not been adequately addressed. Lower rate of resectability when the primary tumor metastasizes to other sites (in addition to the ovaries) and the overall dismal prognosis are the 2 major factors that usually dissuade resection of Krukenberg tumors [8]. On the contrary, if metastasis is limited to the ovaries, surgery may render the patient free of residual disease and the survival time may increase [9]. Concerning the prognosis of Krukenberg tumor, the radical resection of Krukenberg tumor without leaving macroscopic residual lesions is difficult in many cases, and it has been reported that the median duration of survival ranges from 7.7 to 14.0 months [10-12]. The overall survival in our patients was two months. The factors of poor prognosis in our patients are the late diagnosis, presence of ascites and age of young women.

Table 1: Summary of 6 cases.

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Age	**37**	**61**	**46**	**41**	**44**	**47**
Menopausal status	Premeno-pausal	Postmeno-pausal	Premenopausal	Premenopausal	Premen-opausal	Post-menopausal
Initial complaint	Abdominal pain pelvic pain	Abdominal pain nausea vomiting	Abdominal pain nausea vomiting	Abdominal pain	Abdominal pain pelvic pain	Abdominal pain nausea vomiting
Clinical examination	Ascites	Ascites	Ascites	Ascites Pelvic mass	Ascites	Ascites Pelvic mass
Ultrasound- CT Scan	Bilateral ovarian tumor of 6 cm of diameter, urethral-right hydronephrosis, isolated nodule in segment VI of liver and ascites abundant.	Solido-kystiques bilateral ovarian tumors with ascites jelly- like	Bilateral ovarian tumor with ascites	Pelvic mass 15x12 cm Peritoneal nodules	Left ovarian tumor 3cmx2 cm with ascites	Right ovarian solidokystique tumor with ascites Peritoneal granulation even omentum
Primary tumor	Gastric	Gastric	Gastric	Gastric	Colon	Gastric
Surgery	Subtotal hysterectomy without adnexal conservation and oophorectomy	Ovarian biopsy	Total hysterectomy without adnexal conservation	Ovarian biopsy	Ovarian biopsy	Ovarian biopsy
Palliative chemothery	Yes	No	Yes	No	No	No
Overall survival	3 months	2 months	3 months	1 month	3 months	2 months

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Conclusion

Krukenberg tumor of the ovary is a rare metastatic tumor in young women. The starting point is gastrointestinal, most commonly the stomach. The pathophysiology is unclear. The diagnosis is often delayed. The treatment is essentially surgical and the prognosis is bad.

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