International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Thakur N et al. Int J Reprod Contracept Obstet Gynecol. 2023 May;12(5):1482-1485
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20231245

Case Report

Krukenberg tumor

Nitesh Thakur*, Suman Thakur, Kushla Pathania, Rama Thakur

Department of Obstetrics and Gynecology, IGMC, Shimla, Himachal Pradesh, India

Received: 27 February 2023
Accepted: 01 April 2023

***Correspondence:**
Dr. Nitesh Thakur,
E-mail: thakurnitesh3101@gmail.com

ABSTRACT

Krukenberg tumor is a rare form of metastatic ovarian cancer which accounts for less than 2% of all ovarian tumor. Krukenberg tumor mostly occurs after the age of 40 years and is rarely found in younger age group. It usually presents with bilateral involvement of ovaries. It presents when the primary is already advanced. Here we are presenting a rare case of Krukenberg tumor in a 22 years old female with primary from stomach.

Keywords: Krukenberg tumor, Case report, Metastatic ovarian cancer

INTRODUCTION

Krukenberg tumor is a rare form of metastatic ovarian cancer which is histologically characterized by presence of mucin rich signet ring cells. It accounts for 1-2% of the ovarian cancer and constitutes 30-40% of metastatic cancers of the ovary. Primary is from stomach in most of Krukenberg tumor cases which is followed by colon, breast, appendix, hepatobiliary system.[1] Krukenberg tumor is named after a German physician Friedrich Ernest Krukenberg who described 5 cases of knobby ovarian masses with ascites in Germany in 1896. It is considered as a late stage disease and having poor prognosis.[2] Most of the patients die within one year. In 80% cases, patients present with bilateral ovarian involvement with average survival of only 14 months.[3] Average age of presentation is 40-46 years and is rarely found in young age group females. This case report presents the rare presentation of Krukenberg tumor in a very young patient with primary in stomach.

CASE REPORT

22 years old female p3+0 presented in our OPD with distension of abdomen, amenorrhea and pain in abdomen for 3 months. There was history of early satiety but no history of significant weight loss and altered bowel and urinary habits. There was no history of malignancy in her family. Her general physical examination and systemic examination was normal. On per abdomen examination, her abdomen was distended with a mass of size 26-28 week arising from pelvis which was hard in consistency, non-tender, smooth surface with ill-defined margins and same mass was felt through anterior and right fornix on per vaginal examination. Another mass of size 12×12 cm also felt through her left fornix which was also non tender. Uterus not felt separately from the mass. Rectal mucosa was free and no nodularity found in Pouch of Douglas. Her CA-125 was 155 and her CEA, AFP, LDH and HCG was normal. USG revealed two large well defined solid, irregular adenxal masses of size 15×13 cm on right side and 16×7 cm on left side suggestive of bilateral adenxal malignant masses. MRI revealed two large heterogenous lobulated masses arising from bilateral ovaries. On right side it measured 17×13.7×15.1 cm and on left side it measured 10×7.1×13.6 cm with e/o ascitic fluid. Ascitc fluid cytology revealed malignant cells. Upper GI endoscopy and colonoscopy was normal. B/L breast USG was also normal. She underwent total abdominal hysterectomy with bilateral salpingoopherectomy with B/L pelvic lymphadenectomy with infracolic omentectomy.

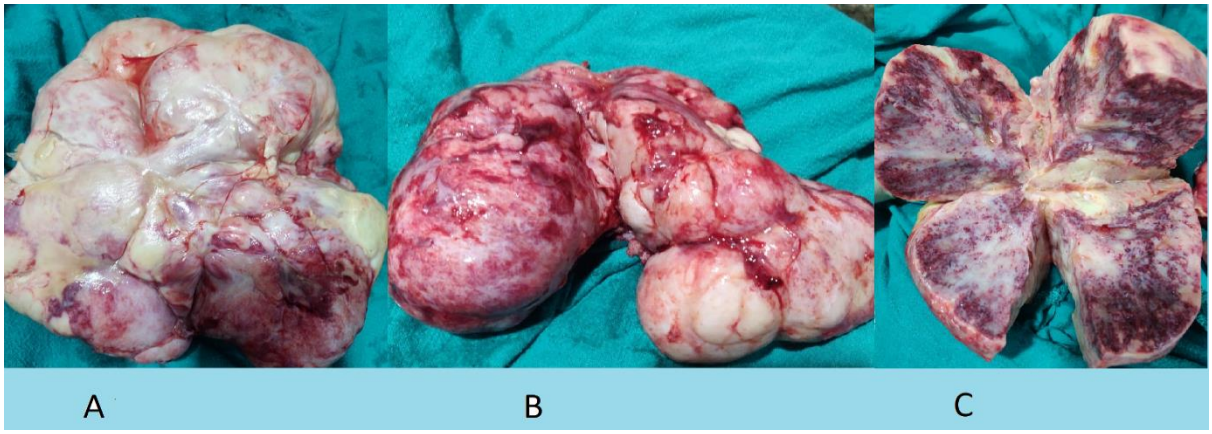

Figure 1: (A-B) Gross appearance of bilateral metastatic ovarian tumor. (C) Homogenous yellow white areas.

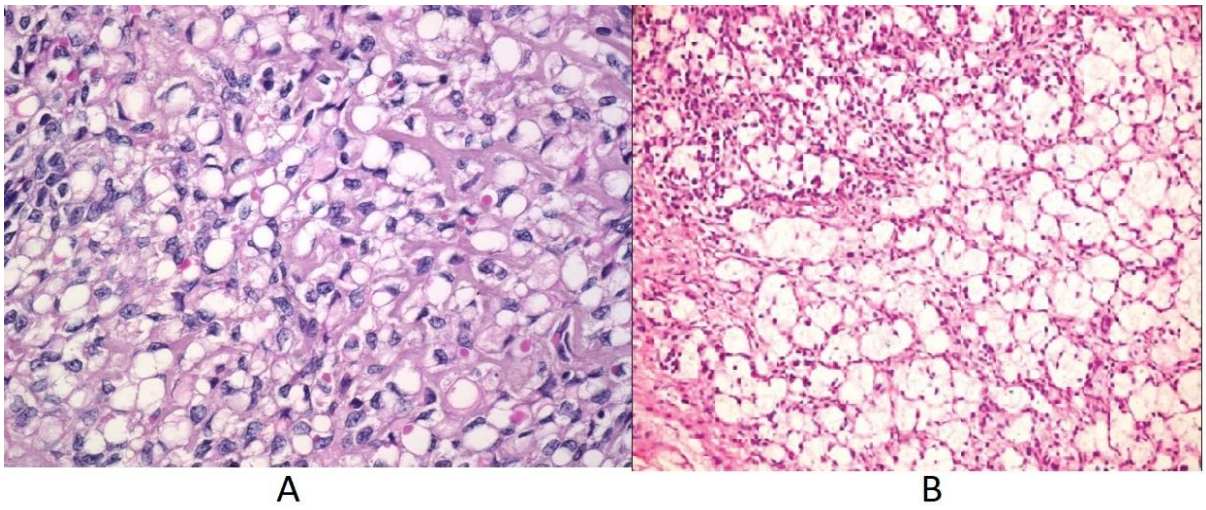

Figure 2: (A) and (B) Characteristics signet-ring cells.

On exploration both ovaries were replaced by solid masses with bosselated surface, 20×15 cm on right side and 10×12 cm on left side with e/o mild to moderate ascites. On cut section both ovarian masses had homogenous solid yellow white appearance. Microscopic examination revealed predominant mucin rich signet ring cells with foci of glandular differentiation and solid sheets diffusely invading the ovarian parenchyma.

Her histopathological report s/o metastatic adenocarcinoma of ovary and diagnosis- B/L Krukenberg tumor of ovary was made. After surgery patient received chemotherapy. After 2 nd month of surgery during her follow up period, her upper GI endoscopy and colonoscopy was repeated which revealed 1×1 cm ulcerated lesion on fundus of stomach. HPE revealed mucosal cells with some tumor cells having hyperchromatic nuclei with abnormal mitotic activity and mucin rich cytoplasm which had pushed the nuclei at periphery. Final diagnosis was made as gastric adenocarcinoma with bilateral ovarian metastatic Krukenberg tumor.

DISCUSSION

Krukenberg tumor is rare metastatic ovarian cancer, having very poor prognosis as compared to primary ovarian cancer. It usually tends to occur in premenopausal age group women with average age of 40-45 years.[1,5] It is rarely seen in young females. Only few cases reported where it is seen in young females. Khurana et al reported rare occurrence of Krukenberg tumor in 13 years old girl.[6] Most common symptoms are abdominal distension and vague GI symptoms like dyspepsia, early satity, altered bowel habits and abdominal pain. Therefore, patient presenting with chronic gastritis symptoms and altered bowel habits should be properly investigated with upper GI endoscopy, colonoscopy and CEA marker. Rarely Krukenberg tumor presents with hormone production by ovarian stroma which results in virilization.[7] In 50% cases malignant cells are seen in ascitic fluid. In majority of cases, patient presents when primary is already advanced. Primary for Krukenberg tumor is mainly reported from stomach, colon and rectum, and also from breast, pancreas, small intestine, biliary tract and gall bladder.[1,8] Literature explained 3 possible routes of dissemination to b/l ovaries

viz. - hematogenous, lymphatics, and peritoneal.[9] However retrograde lymphatic spread is considered as most common route of spread as microscopically lymphatic permeation at hilum and cortex is seen in most of the cases of Krukenberg tumor.[1]

World Health Organization (WHO) described 3 pathological criteria for diagnosing Krukenberg tumor which was explained by Serov and Scully. It states that following features should be present for diagnosis of Krukenberg tumor 1) presence of stromal involvement, 2) ovarian stromal sarcomatoid proliferation, 3) presence of mucin producing signet ring cells.[3] In 80% cases, Krukenberg tumor presents with B/L enlargement of ovaries with bosselated contour. Capsule is usually intact and free from metastatic deposits. On cut section B/L ovarian masses are solid yellow white in color with some cystic areas can also be seen.[1] Krukenberg tumor usually presents when primary is already advanced. However, primary tumor can be diagnosed either preoperatively, during the operation for ovarian metastasis or within few months postoperatively.[4]

There are 3 three treatment options available: 1) cytoreductive surgery, 2) adjuvant chemotherapy, 3) HIPEC (hyperthermic intraperitoneal chemotherapy). In HIPEC chemotherapy, thermal energy releases heat shock protein which expedites cytotoxity of chemotherapeutic medication.[10] Dora, Wing, Moon et al concluded that recurrence after resection of Krukenberg tumor is although common but B/L salpingoopherectomy and more aggressive debulking surgery to remove primary is recommended to improve the outcome of the patient and also improves the quality of life.[11] Many physicians consider systemic chemotherapy for metastatic gastric carcinoma and for colorectal malignancy cytoreductive surgery and hyperthermic (HIPAC) is considered as curative treatment.[12]

Lu et al and Jiang reported that metastasectomy improves overall survival of patients.[13] Many studies are being concluded to know whether complete cytoreductive surgery of primary as well as secondary tumor can improve survival rate and quality of life, but for Krukenberg tumor role of metastasectomy is still a matter of debate.

Immunohistochemistry has a role in determining the source of metastatic ovarian carcinoma. In 90-100% cases primary ovarian malignancy is immunoreactive for CK-7 and negative for CK-20. Metastatic gastric carcinoma is positive for CK-20 and less positive for CK-7 (55%). Metastasis from colorectal carcinoma is generally negative for CK-7 and positive for CK-20.[14]

CA-125 level is usually raised in Krukenberg tumor. It can be used to screen patient for possible ovarian metastasis from preexisting GI, breast, or other malignancies. In post-operative period it is also used to assess the success of resection of tumor.[1] Prognosis of patients with Krukenberg tumor is extremely poor. Median survival rate for metastasis from gastric, colorectal, breast and other origins are 11, 21.5, 31 and 19.5 months respectively.[8]

CONCLUSION

Krukenberg tumor is rarely found among young women. It usually manifests when the primary is already advanced which results in aggressive expansion and metastasis. For early diagnosis, treatment and survival, early health seeking behaviour is needed and in cases of bilateral ovarian masses, a thorough endoscopy and colonoscopy should be done even in younger patients. Immunohistochemistry (IHC) has significant role in determining the primary site of malignancy.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Thakur N, Thakur S, Pathania K, Thakur R. Krukenberg tumor. Int J Reprod Contracept Obstet Gynecol 2023;12:1482-5.