ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 5, September - 2020, Page No. : 224 - 228

Krukenberg tumour with primary in the appendix: A case report

[1]Dr. Ojal Awandkar, Pathology Resident, Department of Pathology, NKP Salve Institute of Medical Sciences and Research Centre, Digdoh Hills, Hingna, Nagpur 440019. Maharashtra

[2]Dr. Anne Wilkinson, Associate Professor, Department of Pathology, NKP Salve Institute of Medical Sciences and Research Centre, Digdoh Hills, Hingna, Nagpur 440019. Maharashtra

Corresponding Author: Dr. Anne Wilkinson, Associate Professor, Department of Pathology, NKP Salve Institute of Medical Sciences and Research Centre, Digdoh Hills, Hingna, Nagpur 440019. Maharashtra

Citation this Article: Dr. Ojal Awandkar, Dr. Anne Wilkinson, "Krukenberg tumour with primary in the appendix: A case report", IJMSIR- September - 2020, Vol – 5, Issue - 5, P. No. 224 – 228.

Type of Publication: Case Report

Conflicts of Interest: Nil

Introduction

In 1896, Krukenberg tumour was first described by Friedrich Ernst Krukenberg as an unusual metastatic tumour of ovary.[1] In 1902, Schlagenhaufer stated that these ovarian tumours do not originate in the ovary, but are metastases from a primary malignancy somewhere else.[2] Schlagenhaufer also emphasized that the most common primary site is the gastrointestinal tract.[2] Krukenberg tumours are uncommon and they only constitute 1-2% of all ovarian tumours.[1] Krukenberg tumours are often (nearly 74 %) found in bilateral ovaries and 26 % are unilateral.[2] Krukenberg tumours are mostly seen in the fifth decade of life, the average age of presentation is 45 years.[3] It is more common in premenopausal than in postmenopausal women.[2] There are several reports of Krukenberg tumour during pregnancy and at younger age.[4] Our patient was 37 years old.

Case report: A 37 years old female patient from Balaghat, Madhya Pradesh, came to the Obstetrics and Gynecology OPD with chief complaints of burning micturition since 2 months, pain in abdomen on and off since 1 month and loss of appetite with weight-loss since 15 days. Her menstrual history was normal. She had 3 children. There was no other significant history.

On abdominal examination: the uterus appeared to be of 26 weeks gestational size. 2 large masses were palpable in the pelvic region. The right sided mass was firm in consistency and measured 10 x 10 cm. The left sided mass was cystic and measured 10 x 9 cm. Both masses had regular surfaces and margins. Mobility was restricted.

Per speculum examination: showed healthy cervix and dirty blood-stained discharge in the vagina.

Per vaginum examination: showed retroverted, normal sized uterus, which was felt separately from the masses. Cervix was pointing downwards and towards right. Bilaterally 2 large adnexal masses of size 12 x 12 cm each, non-tender and with restricted mobility were palpable. Cervical movement was not transmitted to the masses. The provisional clinical diagnosis was bilateral pelvic masses under evaluation (? malignant).

Investigations done: Hemogram of the patient was normal. Her blood group was A positive. Hb

electrophoresis showed AA pattern. Liver function tests showed mildly reduced alkaline phosphatase (42U/L), slightly elevated globulins (3.5 g/dl) and reduced albumin to globulin ratio (1.14). Kidney function tests were normal except urea which was reduced (8 mg/dl). Thyroid function tests were normal. CA 125, LDH, AFP were within normal limits. Urine routine showed trace albumin and absent sugar.

Chest X ray standing postero-anterior view in mid respiratory phase showed prominent broncho-vascular marking in right lower lung zone. USG abdomen and pelvis showed a large mass 14.8 x 13 x 10 cm arising in right adnexa, extending upto right iliac region and umbilicus with multiple cystic components noted within it, largest cyst was 3 x 2.5 cm. This lesion showed mild vascularity on color doppler with no evidence of calcification noted within it. Another similar lesion of size 10.9 x 10.1 x 8.9 cm was noted in the left iliac region and left adnexa. Bilateral ovaries could not be seen separately from these lesions. Bilateral adnexal masses were proposed to be originating from ovaries (? Neoplastic, ? dysgerminoma). Other radiological differential diagnosis put forward was large bilateral broad ligament fibroids. Minimal ascites was present.

PAP smear of this patient showed inflammation with low grade squamous intraepithelial lesion (LSIL). Peritoneal fluid cytology showed chronic inflammation with reactive mesothelial cells and occasional atypical cells. Bilateral ovarian scrape cytology was suggestive of malignant mucinous tumour (Considering bilateral nature it was advised to rule out metastatic deposits). A staging laparotomy was performed and total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH with BSO) and appendicectomy was done.

We received the gross specimen of uterus with cervix and bilateral adnexa. Uterus measured 10 x 6.5 x 3.5 cm, right ovary measured 15 x 12x 5 cm, left ovary measured 12 x 10 x5 cm, right fallopian tube measured 6.5 x 0.8 cm, left fallopian tube measured 6.5 x 0.8 cm (Figure 1). A specimen of appendix was also received which appeared to be edematous and dilated (Figure 2). Its tip was intact and lumen was obliterated. It measured 5 x 2 cm. External surfaces of both ovaries were smooth and glistening. The cut surface of left ovary showed cystic areas and that of right ovary showed homogenous yellowish solid areas. Endometrial thickness was 0.7 cm, myometrial thickness was 1.2 cm, cervical length 2.5 cm. The cut surface of appendix showed obliterated lumen.

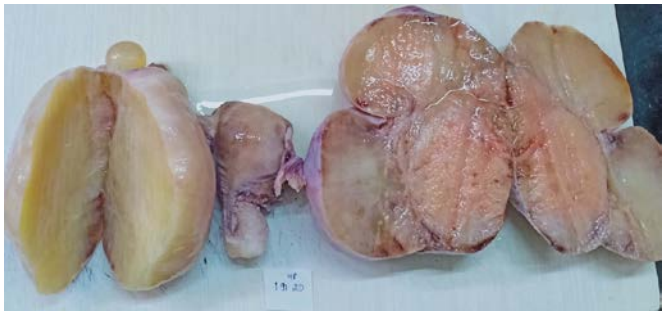

Figure 1: Uterus with bilateral ovaries. Right ovary cut surface showing yellowish homogenous solid areas. Left ovary cut surface showing cystic areas.

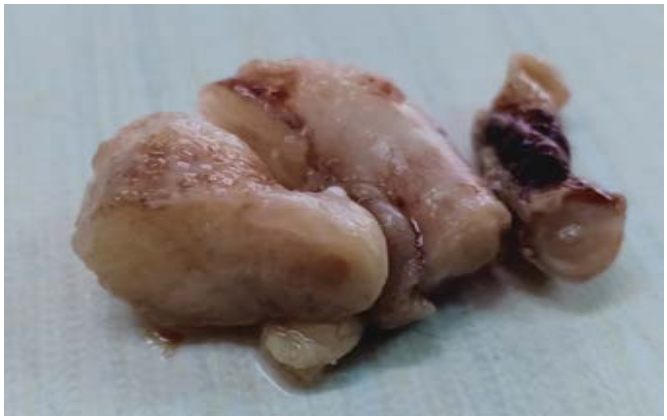

Figure 2: Oedematous and dilated specimen of appendix. The cut surface showed obliterated lumen.

Microscopically, sections from the endometrium, cervix and fallopian tube revealed normal histology. Myometrium revealed endometrial glands and stroma in its superficial layer. Sections from both the ovaries revealed an encapsulated mass composed of many signet ring cells with intracellular mucin displacing the nuclei (Figure 3). Pools of extracellular mucin were also seen. Surrounding fibroconnective tissue showed mild mononuclear inflammatory infiltrate. Normal ovarian tissue could not be identified.

Several sections were studied from the appendix. The submucosa and muscularis revealed nests and clusters of signet ring cells with intracellular mucin displacing the nuclei. Tumour cells were seen extending up to the serosa (Figure 4). Wall showed dense aggregates of lymphocytes and congested blood vessels.

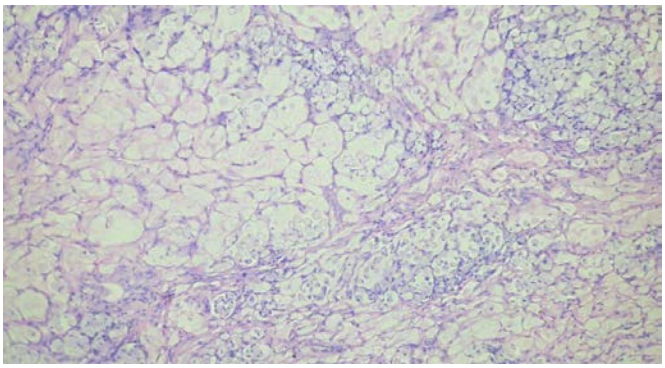

Figure 3: Photomicrograph of ovary showing many signet ring cells with intracellular mucin displacing the nuclei and pools of extracellular mucin. (Hematoxylin and Eosin stain 40X)

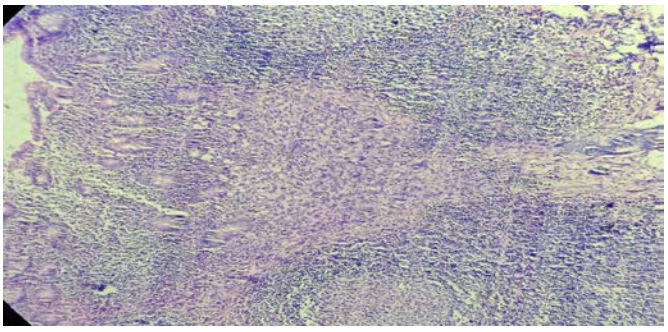

Figure 4: Photomicrograph of appendix showing clusters of signet ring cells with intracellular mucin displacing the nuclei in the submucosa and extending up to the muscularis layer of appendix. (Hematoxylin and Eosin stain 40X)

Final pathological diagnosis given was Mucinous adenocarcinoma appendix with bilateral Krukenberg tumour in ovaries.

Discussion

The most common carcinoma to metastasize as Krukenberg tumour is gastric carcinoma, particularly adenocarcinoma of stomach.[1] The other primary tumours metastasizing as Krukenberg tumour are breast (invasive lobular breast carcinoma), appendix, colon, small intestine, rectum, urinary bladder, gallbladder, biliary tract, pancreas, ampulla of Vater and uterine cervix.[1] The tumour cells spread to the ovaries by direct, hematogenous route or through lymphatics.[3]

The exact mechanism of metastasis of the tumour cells from the stomach, appendix or colon to the ovaries is not certain.[2] Classically, it was proposed that direct seeding across the abdominal cavity leads to the spread of this tumour, but recently some researchers have put forward that lymphatic (i.e. retrograde through the lymph nodes), or hematogenous (i.e. through the blood) spread is more likely, as most of these tumours are found inside the ovaries.[3] Interestingly, the metastases are never found in the omentum.[3]

Differentiation between primary ovarian mucinous carcinoma and a metastatic mucinous carcinoma can be made based on clinical features, morphological and pathological findings.[3] One of the most important morphological features of metastatic mucinous carcinoma of ovary is the presence of signet ring cells.[1] The signet ring cells are rarely seen in primary ovarian mucinous tumours.[1] The features more in favour of secondary (metastatic) mucinous carcinomas are bilateral tumour, size of the tumour (less than 10 cm),

surface tumour deposits, a nodular growth pattern, extensive intra-abdominal spread, widespread infiltrative pattern and lymphovascular permeation.[1,2] The features which are characteristic of secondary mucinous carcinomas in the ovary are absent in case of primary carcinoma of ovary.[3] A unilateral tumour, low tumour staging, smooth tumour surface, association with other ovarian pathologies and background of adenofibroma or cyst adenoma are the features more in favor of primary carcinoma of ovary.[2]

The prognosis is worse if the primary tumour is identified after ovarian metastasis.[5]

Primary appendiceal adenocarcinomas (PAAs) are very rare malignant neoplasm accounting for 0.05–0.2% of all appendicectomies and only 6% of all malignant tumours of appendix. It constitutes less than 0.5 % of all gastrointestinal neoplasms.[7] They have been classified into 4 groups: mucinous adenocarcinoma, colonic type adenocarcinoma (most common), goblet cell carcinoma and signet ring cell carcinoma (exceptionally rare).[7] Mucinous appendiceal masses are four times more common in women than men with a peak incidence above 50 years of age.[8] Carcinomas of appendix are usually well differentiated mucinous adenocarcinoma, which tend to produce pseudomyxoma peritonei and do not show metastatic spread until late in the disease process.[7]

There is no role of chemotherapy and radiotherapy in the management and clinical course of Krukenberg tumour.[1] No curative treatment is available, therefore, bilateral oophorectomy during surgery of the primary tumour is advised by some authorities.[1] Further study and evaluation for better outcome is required if this treatment option is followed.[3] If other dissemination or ascites are absent, Krukenberg tumour should be treated with excision of the primary tumour and ovarian metastastectomy so as to lengthen the survival time mainly in patients with primary tumour arising from the stomach.[4] Most of the patients undergo chemotherapy with a platinum agent such as cisplatin or oxaliplatin and plus 5-fluorouracil.[6] Platinum-based therapy is the principal regimen used for disease that recurs more than 6 months after prior therapy.[6] The median survival time after the diagnosis of a Krukenberg tumour is 7 to 14 months.[5]

Conclusion

When a Krukenberg tumour is diagnosed, we should also look for the primary in the appendix.

References

1. Hatwal D, Joshi C, Chaudhari S, Bhatt P. Krukenberg tumor in a young woman: a rare presentation. Indian Journal of pathology and microbiology. 2014 Jan 1;57(1):124.
2. Spinelli C, Liloia C, Piscioneri J, Ugolini C, Strambi S. An Unusual evolution of Krukenberg tumour: A case report. Journal of clinical and diagnostic research: JCDR. 2016 Oct;10(10):PD07.
3. Khurana P, Sachdev R, Uppal S, Bisaria D. Krukenberg tumor in a 13-year-old girl: a rare occurrence. Indian Journal of Pathology and Microbiology. 2010 Oct 1;53(4):874.
4. Dueñas-García OF, Diaz-Sotomayor M, Chanana C. Bilateral ovarian krukenberg tumor in a full-term pregnancy. ISRN obstetrics and gynecology. 2010 Oct 28;2011.
5. Al-Agha OM, Nicastri AD. An in-depth look at Krukenberg tumor: an overview. Archives of pathology & laboratory medicine. 2006 Nov;130(11):1725-30.
6. Holtz F, Hart WR. Krukenberg tumors of the ovary. A clinicopathologic analysis of 27 cases. Cancer. 1982 Dec 1;50(11):2438-47.

7. Behera PK, Rath PK, Panda R, Satpathi S, Behera R. Primary appendiceal mucinous adenocarcinoma. Indian Journal of Surgery. 2011 Apr 1;73(2):146-8.
8. Sharma E, Gokani SA, Neville J, Sinha A, Agarwal T. Mucinous appendiceal adenocarcinomas: a diagnostic challenge. Journal of Surgical Case Reports. 2020 Jan;2020(1):rjz355.
9. Shaikh R, Samo KA, Ali A, Saeed S, Memon AS. Mucinous adenocarcinoma of the appendix. JPMA-Journal of the Pakistan Medical Association. 2011 Dec 1;61(12):1233.
10. Clement Wilfred D, Mysorekar V, Kamath S, Singla S. Appendiceal carcinoma with Krukenberg's tumour mimicking primary ovarian cancer. Journal of Clinical and Diagnostic Research: JCDR. 2013 Aug;7(8):1747.
11. Kim KH, Kim CD, Lee HS, Hyun JH, Kim YS, Kim IS. Bilateral ovarian carcinoma metastatic from the ampulla of Vater: a rare Krukenberg tumor. J Korean Med Sci. 1999 Apr 1;14(2):220-.
12. Das S, Sahu D, Wani M, Reddy PK. A curious discourse of Krukenberg tumor: a case report. Journal of gastrointestinal oncology. 2014 Dec;5(6):E117.
13. Nirmal A, Kumar S, Jha J. Krukenberg tumour of the ovary in young female: a Case Report. Int. J. Curr. Res. Med. Sci. 2016;2(10):60-4.
14. Santosh T, Rao ES, Rao BR, Kumar RV. Krukenberg Tumor arising from Bilateral Lobular Carcinoma in a Pregnant Lady: A Rare Case Report. World Journal of Pathology. 2014 Nov 16;3(16).
15. Vakili SM, Sharbatdaran M, Noorbaran A, Siadati S, Moslemi D, Shafahi S. A case of colon cancer with breast metastasis and krukenberg tumor. International journal of hematology-oncology and stem cell research. 2014;8(1):46.