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Annals of Geriatric Education and Medical Sciences

Journal homepage: https://www.agems.in/

Case Report

A rare case of primary carcinoma of gallbladder as a cause of Krukenberg tumors in both ovaries

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ARTICLE INFO

Article history:
Received 24-05-2022
Accepted 28-05-2022
Available online 27-07-2022

Keywords:
Gallbladder cancer
Ovarian mass
Krukenberg tumor
bilateral

ABSTRACT

Background: Gallbladder cancer is frequently transmitted to the liver and other gastrointestinal organs through direct extension. Ovarian metastases of biliary origin are quite uncommon.
Case Presentation: We report a rare case having Krukenberg tumours in both ovaries, an uncommon metastatic location of biliary cancer. A thorough analysis of the proposed tactics was carried out after a thorough critical review. The final diagnosis was made using a combination of radiology, histology, and serum markers.
Conclusion: In the case of gallbladder cancer, the presence of a Krukenberg tumour should be examined.

1. Introduction

The ovary is a common location for metastases from other organs. However, nothing is known about biliary carcinoma that has spread to the ovaries and manifested as a primary ovarian tumour. The most common way for this cancer to spread is by direct extension to the liver and other organs in the gastrointestinal system. Gallbladder cancer that has progressed to the ovary is extremely rare, with only a few studies in the literature.[1–5] The authors describe a rare clinical manifestation of gallbladder cancer in which a Krukenberg tumour of biliary origin is found in both ovaries.

2. Case Report

A 51-year-old female was admitted with c/o Yellow eye discoloration, abdominal distension, abdominal pain, itching throughout the body for 1 month. Constipation was also present for five days. There was no history of altered sensorium or of any comorbidity. On examination at admission: Blood pressure-110/70 mm of Hg, Pulse rate-88/min, SpO2 - 98%, Respiratory rate -16/min, Icterus ++, Pallor + and no edema. CBC revealed anemia (Hb-8.7). Liver function test showed raised total Bilirubin (10.99 mg/dl) and GGT (129IU/L). AFP values were significantly higher (1422 ng/ml). Coagulation and renal parameters were normal. Viral markers were negative.

Triphasic CT of whole abdomen revealed large thin walled peripherally enhancing multiloculated, multiseptated cystic lesions were seen in bilateral adnexa arising from both ovaries(Figure 1 A and B), measuring 15.2x11.8 cm and 11.9x9.3 cm in right and left adnexa respectively. Both the lesions show contents of varying densities. Post contrast images shows enhancement of septations. Visualised field of view of lung fields show multiple nodular opacities indicating towards metastasis. Moderate ascites and few enhancing omental deposits were also noted. Ill defined large lobulated heterogeneously enhancing lesion (measuring ~ 9x4.3x8.8 cm) arising from body and neck region of GB (Figure 1 C) with infiltration into the adjacent liver parenchyma (segment IVb, V & VI). The lesion was seen involving hilar confluence of hepatic ducts causing

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https://doi.org/10.18231/j.agems.2022.007

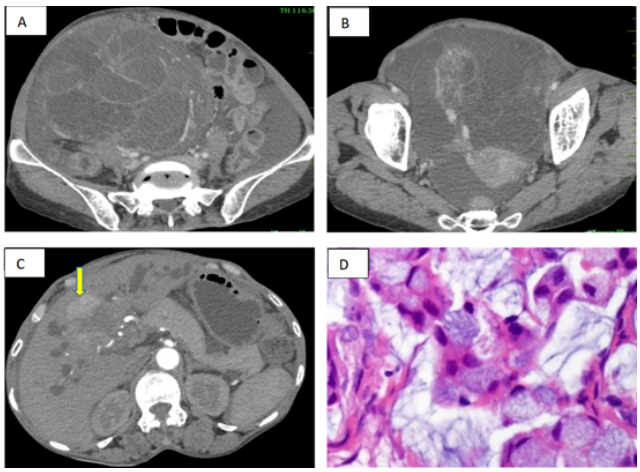

Fig. 1: A and B - Axial sections of CECT abdomen showing large thin walled peripherally enhancing multiloculated, multiseptated cystic lesions were seen in bilateral adnexa arising from both ovaries. C - Axial sections showing heterogenously enhancing lesion involving neck of GB (Arrow) and hepatic duct confluence causing IHBRD. D - Nests of pleomorphic, mucin-filled, signet ring cells in a case of Krukenberg tumor of the ovary. The primary was carcinoma of GB.

dilatation of bilobar intrahepatic biliary radicals. Multiple enhancing lesions of varying sizes were also seen in the hepatic parenchyma indicating towards metastasis.

The levels of tumour markers in the blood were increased. (CA 125 = 221.3 U/ml; CEA = 11.7 ng/ml;). Adeno-carcinoma was discovered in a GB mass biopsy. The ovarian tumours were recognised as metastatic ovarian adenocarcinoma on pathological slides (Figure 1 D). The results of immunohistochemistry for cytokeratin (CK)-7, CK-20, and CEA were all quite positive. Gallbladder carcinoma was discovered to be the main diagnosis with Krukenberg tumours to both ovaries based on CT scan and immunohistochemical tests. The patient was put on chemotherapy for Carcinoma GB and is having normal follow-up.

3. Discussion

Krukenberg tumours are ovarian cancers that have disseminated from their primary origin, usually the gastrointestinal system, although they can also spread to other organs. The most prevalent cause is adenocarcinoma of the stomach. Krukenberg tumours are frequently seen in both ovaries, indicating that they are metastatic. The name of Krukenberg tumours was given after Friedrich Ernst Krukenberg, a German physician who first described ovarian fibrosarcoma in 1896, believing it to be a novel kind of primary ovarian cancer.[6] It was discovered to be of metastatic gastro-intestinal origin six years later.

Ovarian metastases from other organs affect around 5% to 15% of women.[7] Albores-Saavedra[8] reported 6 percent of instances of biliary cancer with ovarian metastases, although only 19 such instances have been described in the literature.[3,7,9–14] Eight of the patients had an ovarian mass[3,9,11–14] and five of the patients had clinical-radiological signs that mimicked a primary ovarian tumour.[3,9,14] Four patients[3,9,11,12] were misdiagnosed as primary ovarian tumours despite preoperative radiological screening, and a few were wrongly diagnosed as main ovarian tumours even in histology reports.[7,12]

The majority of individuals experience vague abdomino-pelvic symptoms. However, similar to our findings, only a few cases of jaundice, itching, or other symptoms associated with gallbladder cancer were found.[3,12,14] Chronic cholecystitis or cholelithiasis has masked the radiological features of cancer. Serological markers like alkaline phosphatase, CA19-9, CEA, and CA-125 have been observed to be varied during metastases[3,7,9,10,12–14],although they were found to be raised in our research.

Several factors that might assist differentiate metastases from original ovarian cancers have been noted in the literature.[3,15] Bilaterality, multinodularity, surface implants, infiltration pattern, growth in the ovarian hilum, foci of uninvolved ovarian tissue, mucin without epithelial cells on the tumour surface, and the inclusion of signet ring cells are the most significant signs for metastatic adenocarcinoma. Many of these characteristics, however, may be absent, especially if the metastasis manifests as a benign cystic lesion.

The most significant tool for accurate diagnosis is histopathological and radiological investigation, with immunohistochemistry playing a significant role. Due to their rarity and poor prognosis, there are no research on treatment options and outcomes for ovarian metastases from biliary origin.

4. Conclusion

Gallbladder carcinoma should be included to the list of previously identified causes of ovarian metastatic tumours that mimic primary ovarian mucinous tumours.

In the case of bilateral ovarian cancers, we urge that we proceed as follows: (1) There must be a suspicion of Krukenberg tumour. (2) The major site (gastrointestinal, colon, breast, and gall bladder) must be searched thoroughly.

The most important takeaways are the difficulties in clinical and radiological evaluation of ovarian metastases, which might seem to be primary ovarian cancer, the critical need of histological investigation, and the necessity for a multidisciplinary approach to avoid such mistakes. Given this unique occurence in clinical settings, the existence of Krukenberg tumour should be evaluated in the management

of gallbladder cancer.

5. Abbreviations

1. GB- Gall bladder
2. CBC- Complete blood count
3. GGT- Gamma-glutamyl transferase
4. AFP- Alpha-feto protein

6. Consent for Publication

Appropriate consent was taken from patient and relatives.

7. Availability of Data and Material

The data was retrieved from our clinical and radiological database.

8. Source of Funding

None.

9. Conflict of Interest

None.

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Cite this article: Dubey R, Sen KK, Mishra A. A rare case of primary carcinoma of gallbladder as a cause of Krukenberg tumors in both ovaries. *Ann Geriatrics Educ Med Sci* 2022;9(1):34-36.