**Case 7449**

**Gall bladder carcinoma causing Krukenberg tumors**

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**Section:** Genital (female) imaging  
**Case Type:** Clinical Cases  
**Authors:** Shinagare AB, Patil NK  
**Patient:** 56 years, female

**Clinical History:**

A 56 year old female with pain and distention of abdomen and bleeding per vagina.

**Imaging Findings:**

A 56 year old female patient presented with dull pain in umbilical region and mild distention of abdomen since 10 days. She also had a history of bleeding per vagina on and off since 2 months. No other significant history was present. Her routine workup, consisting of hemoglobin, blood counts and liver function tests was normal. On abdominal examination, a vague mass was felt in lower abdomen. On pelvic examination, bilateral adnexal fullness was noted. Computed tomographic (CT) evaluation of the abdomen and pelvis was performed, with oral and intravenous contrast (Fig 1-4).

Large well defined lobulated mass lesions containing cystic areas, solid component and strongly enhancing septae are seen in bilateral adnexal regions, the lesion on right side being larger and extending upward into abdomen (Fig 1,2). The ovaries were not seen separately. Hypodense, non enhancing lesions are seen in liver (Fig 3,4). Focal thickening and irregularity of gall bladder wall with abnormal enhancement is noted (Fig 3,4). Based on these findings, diagnosis of carcinoma of gall bladder with liver metastasis and Krukenberg tumors was made. CT guided biopsy was taken from ovarian and liver lesions. Histopathology was diagnostic of adenocarcinoma. No ovarian tissue was found. Hence the imaging diagnosis was confirmed.

**Discussion:**

Thickening and irregularity of the gall bladder wall is the most important clue to the correct diagnosis in this case. The differential diagnosis of primary ovarian neoplasm should be considered. The imaging findings which suggest diagnosis of ovarian metastases rather than primary ovarian neoplasm are: absence of gross ascites in spite of large size and bilaterality of ovarian lesions [1], presence of liver lesions and absence of retroperitoneal lymphadenopathy (sections not shown). Hematogenous metastases from ovarian carcinomas are rare [2, 3]. However, imaging findings alone cannot reliably distinguish between primary and metastatic ovarian lesions. CT guided biopsy proved the diagnosis.

In 1896 Friedrich Ernst Krukenberg described a new type of ovarian tumour that was proved to be metastatic in nature in 1902. About 5-10% of all ovarian malignant lesions are metastatic and approximately 40% of them are Krukenberg tumours. Overall incidence is approximately 0.16/100,000. Histologically they are peculiar in being signet cell adenocarcinoma with sarcomatoid stromal reaction. Most common primary site is stomach, followed by colon. Gall bladder, biliary tract and appendix are rare sites. In about 20% of cases, the primary site remains unknown. Presentation is usually in 5th or 6th decade. Based on imaging findings, Krukenberg tumours can be of three types: solid masses with intratumoural cystic areas, solid masses without intratumoral cysts and predominantly cystic masses. Solid masses with intratumoural cystic areas are the most common pattern [4]. Ultrasound usually demonstrates bilateral, solid, hypervascular masses with clear margins. Typically, well demarcated intratumoural
Cysts are noted, which show a prominent vascular signal along their walls on Doppler examination. On CT or MRI, the walls of the intratumoral cysts show strong contrast enhancement. Solid masses without intratumoral cysts and predominantly cystic masses are less commonly encountered.

Krukenberg tumour should be suspected when one sees well defined bilateral solid ovarian tumours containing well demarcated, intratumoral cystic areas, especially if the walls of those cysts demonstrate strong contrast enhancement [4]. Ascites is more commonly seen in case of primary ovarian neoplasm [1]. The prognosis is usually grim. According to a recent study, in absence of obvious distant metastases, metastasectomy is associated with improved survival as compared to chemotherapy or conservative management [5].

**Differential Diagnosis List:** Gall bladder carcinoma causing liver metastases and Krukenberg tumors

**Final Diagnosis:** Gall bladder carcinoma causing liver metastases and Krukenberg tumors

**References:**

Description: Axial computed tomography section showing right adnexal mass lesion extending upward into abdomen. Note the enhancing solid component, non-enhancing cystic areas and presence of enhancing septae. Origin:
Description: Axial CT image showing left adnexal mass lesion. On the right side, the lowermost portion of the right adnexal mass is seen. Origin:
Description: An ill-defined hypodense non enhancing lesion is seen in liver. Also note the focal irregularity, thickening and abnormal enhancement of the gall bladder wall. The liver lesion appears to be a metastasis and not seen in contiguity with the gall bladder.Origin:
Description: A subtle lesion is seen in liver, in addition to the larger lesion. Also note the focal irregularity, thickening and abnormal enhancement of the gall bladder wall with adjacent mild fat stranding. Origin: