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## Skeletal Metastasis From Carcinoma of the Gall Bladder: Need for Bone Scintigraphy Justified?

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**Background:**

Carcinoma of the gall bladder has a guarded prognosis with predominant sites of involvement being liver and regional nodes. Osseous metastasis in carcinoma of the gall bladder is rare and hence bone scintigraphy does not form a part of the routine work-up for such patients.

**Case Reports:**

We describe two patients with carcinoma of the gall bladder with osteolytic metastasis (stage 4). Conservative treatment was planned but both of them succumbed to the illness.

**Conclusions:**

We thus highlight the importance of performing a bone scan or PET CT in cases of carcinoma of the gall bladder. Besides, our cases challenge Paget's seed – soil theory for sites of metastasis.

**MeSH Keywords:**

Gallbladder Neoplasms • Neoplasm Metastasis • Prognosis

**Abbreviation:**

**CaGB** – carcinoma of the gall bladder

**PDF file:**

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### Background

Carcinoma of the gall bladder (CaGB) presents with non-specific symptoms that often lead to a delay in diagnosis [1]. Usually by the time the disease is discovered, metastases to the liver and regional nodes have already occurred. Thus, the prognosis is dismal [1]. Metastasis to bones is a rare occurrence [2–10]. In this manuscript, we describe two cases of osseous metastasis from CaGB.

### Case Report

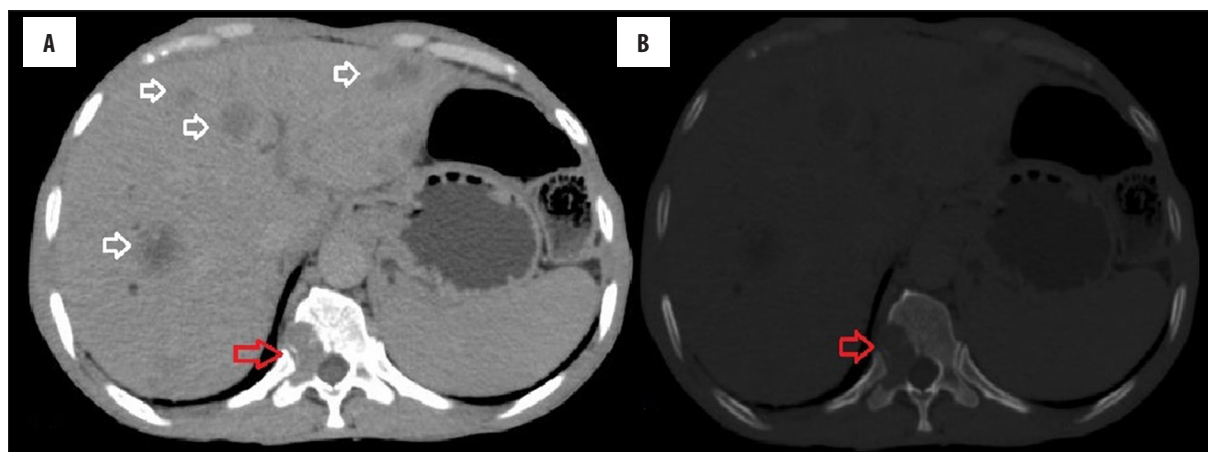
#### Case 1

A 45-year-old male presented with features of obstructive jaundice, weight loss since a few months. He also complained of back pain since 3 weeks. Biochemical profile was consistent with obstructive jaundice. Ultrasonographic examination revealed a heterogenous mass replacing the gall bladder fossa suggestive of neoplastic etiology. Besides, there were numerous deposits within the liver parenchyma. The patient underwent CT of the abdomen for staging of CaGB (Figure 1) since he could not afford a PET-CT. There were metastases to the

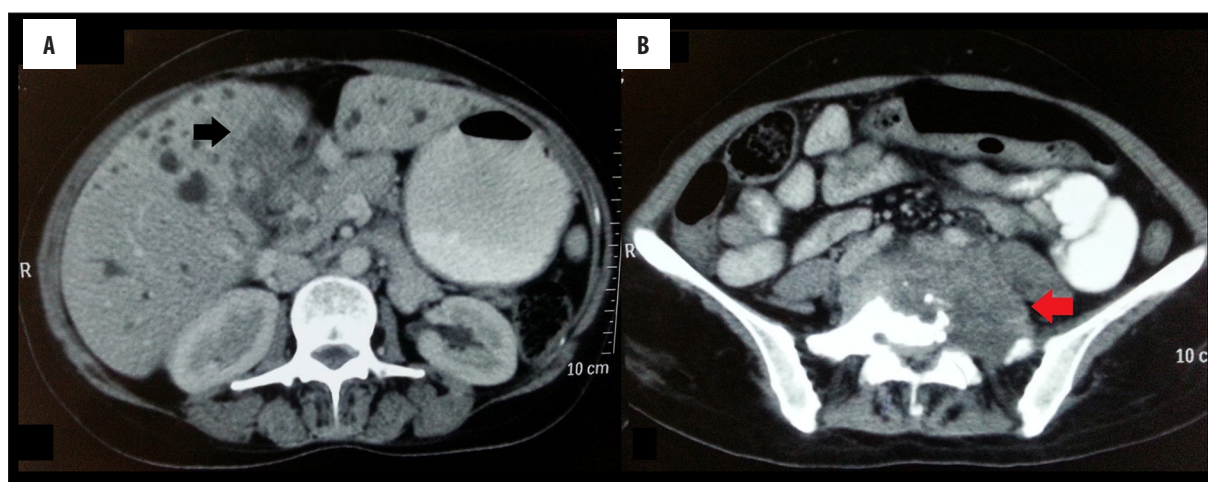


**Figure 1.** Patient 1: CECT in axial plane reveals a minimally enhancing soft tissue mass that partially replaced the gall bladder fossa (black arrow).

liver and regional nodes. Additionally, there was destruction of the pedicle of the eleventh dorsal vertebra on the right side (Figure 2A, 2B). Bone biopsy revealed adenocarcinoma upstaging the disease to stage 4 CaGB. Supportive care was planned for the patient but he succumbed to his illness ten days later.



**Figure 2.** Patient 1: Axial non-contrast CT abdomen shows multiple hepatic metastases (white arrows). The red arrow points towards the skeletal metastasis to right pedicle, adjoining transverse process and posterior part of the body (soft tissue window – A; bone window – B).



**Figure 3.** Patient 2: (A) Contrast enhanced axial CT shows a mass replacing gall bladder fossa (black arrow). There is dilation of intrahepatic biliary radicles. (B) Post contrast CT at the level sacrum demonstrates destruction of sacrum with adjacent enhancing soft tissue mass.

## Case 2

A 40 year female presented with low backache and icterus since 5 months. Serum examination revealed high direct bilirubin. Imaging showed a mildly enhancing mass at gall bladder fossa with dilated intrahepatic biliary radicles (Figure 3A). Also, there was destruction of sacral vertebra with adjacent soft tissue (Figure 3B) which turned out to be metastatic adenocarcinoma. Thus a diagnosis of stage 4 CaGB was established. The patient was advised supportive therapy but she succumbed the very next day.

## Discussion

CaGB afflicts the elderly and constitutes 4% of gastrointestinal malignancies [1]. Risk factors include cholelithiasis, female gender, obesity and multiparity [2]. While 95% of CaGB patients have gall stones, only 0.2% of patients with cholelithiasis exhibit tumourigenesis [1]. Though jaundice may be a presenting feature, non-specific symptoms like chronic right upper quadrant pain, chronic cholecystitis, weight loss, anorexia, nausea and vomiting, delay the diagnosis [2]. Often CaGB is incidentally detected during surgery for chronic cholecystitis or gall stones [1]. A mass

replacing the gall bladder fossa is the most common radiological appearance [2].

Spread occurs both by invasion and metastasis. The latter frequently occurs to the liver and regional nodes. Osseous metastasis, however, is extremely rare [2–10]; it occurs in advanced stages [3] and is usually osteolytic [4]. The organ tropism (favourable soil) by the cancer cells (seed) was put forth by Paget on the basis of complementary expression of chemokines and ligands. However, the present case among others [2–10], challenges the 'Seed-and-soil' theory of Paget for metastasis. Bone metastasis in CaGB portends a poor prognosis with a rapidly fatal course [7].

Bone scintigraphy or PET-CT does not form a part of the routine work-up for CaGB since bone metastasis is rare. The incidence of skeletal metastasis can, however, be as high as 10% [3]. Hence, bone scintigraphy assumes a very important role in staging the disease [2–5,8–10].

The management for CaGB is surgical for stage 1 and 2; advanced disease is unresectable [1]. In the latter, chemotherapy and radiotherapy has not been shown to offer survival benefit [1].

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## Conclusions

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The present article describes skeletal metastasis in CaGB and highlights the need to include bone scintigraphy in the protocol to accurately stage CaGB.

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