



Received: 2015.07.01
Accepted: 2015.07.16
Published: 2016.04.29

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

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

Yashant Aswani^{ABCDEF}, Priya Hira^{ABCDEF}

Department of Radiology, King Edward Memorial Hospital and Seth Gordhandas Sunderdas Medical College, Mumbai, India

Author's address: Yashant Aswani, Department of Radiology, King Edward Memorial Hospital and Seth Gordhandas Sunderdas Medical College, Mumbai, India, e-mail: yashant_aswani@rediffmail.com

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:

<http://www.polradiol.com/abstract/index/idArt/895190>

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

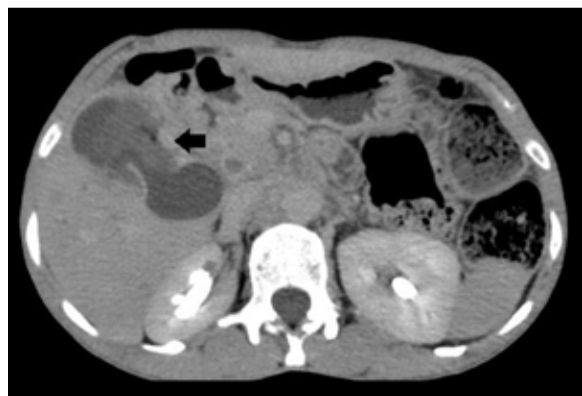


Figure 1. Patient 1: CECT in axial plane reveals a minimally enhancing soft tissue mass that partially replaced the gall bladder fossa (black arrow).

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.

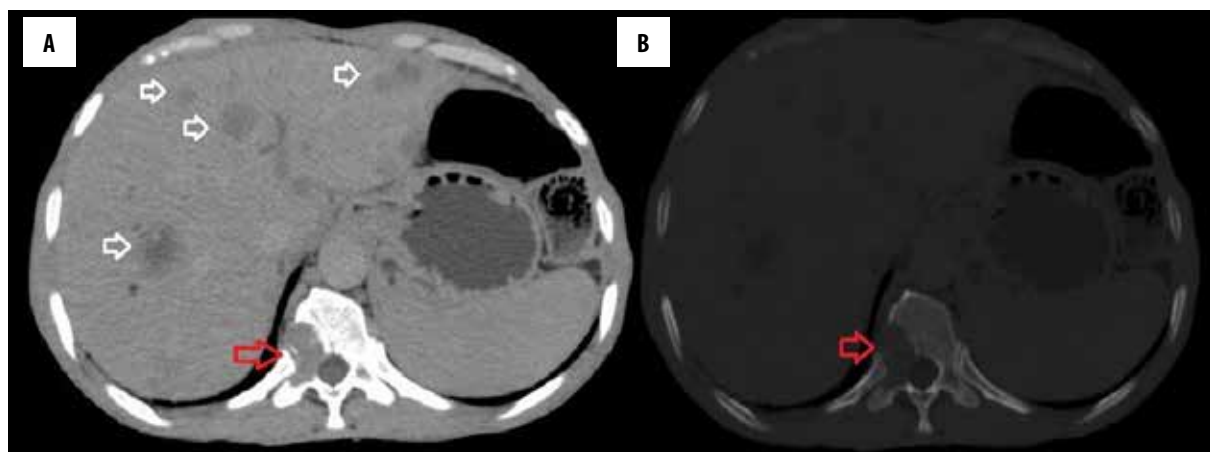


Figure 2. Patient 1: Axial non-contrast CT abdomen shows multiple hepatic metastases (white arrows). The red arrow points towards the skeletal metastasis to right pedicle, adjoining transverse process and posterior part of the body (soft tissue window – A; bone window – B).

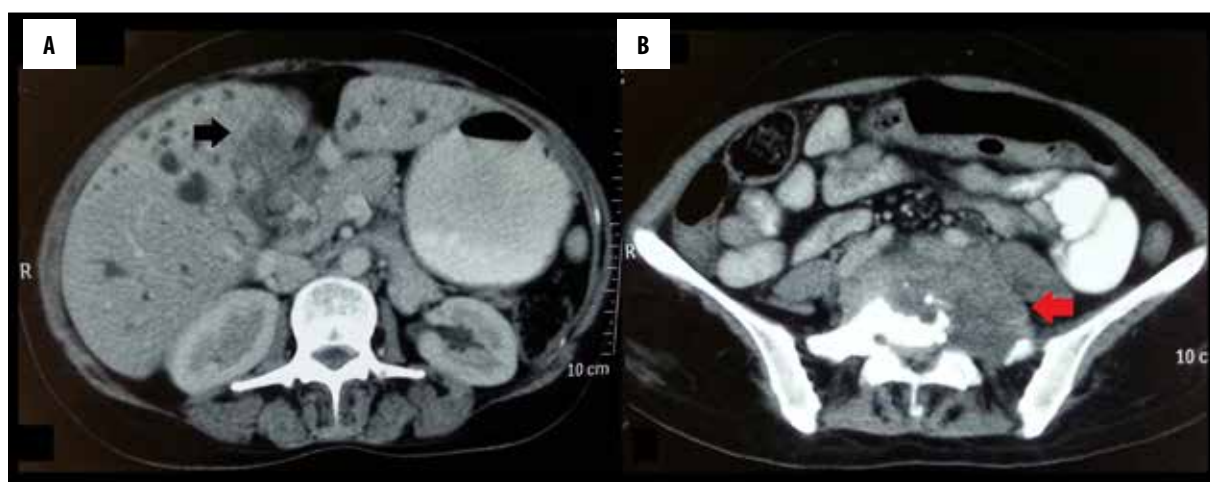


Figure 3. Patient 2: (A) Contrast enhanced axial CT shows a mass replacing gall bladder fossa (black arrow). There is dilation of intrahepatic biliary radicles. (B) Post contrast CT at the level sacrum demonstrates destruction of sacrum with adjacent enhancing soft tissue mass.

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].

Conclusions

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

References:

1. Carr BI: Tumors of the liver and biliary tree. In: Fauci AS, Braunwald E, Kasper DL et al. (eds.), Harrison's principles of internal medicine. 17th ed. Vol 1. McGraw-Hill Companies, 2008, USA: 586
2. Win AZ, Aparici CM: Rare case of gallbladder cancer presenting with metastasis to bone and brain in an African American male discovered by F18-FDG PET/CT. *J Biomed Graph Comput*, 2013; 3(2): 24–29
3. Singh S, Bhojwani R, Singh S et al: Skeletal metastasis in gall bladder cancer. *HPB (Oxford)*, 2007; 9(1): 71–72
4. Kumar A, Bhargava SK, Upreti L, Kumar J: Disseminated osteoblastic skeletal metastases from carcinoma of gall bladder – a case report. *Indian J Radiol Imaging*, 2003; 13: 37–39
5. Prakash M, Aiyappan SK, Kumar A et al: Solitary skeletal metastasis in carcinoma gallbladder: Two case reports. *Cancer Imaging*, 2010; 10: 121–23
6. Youssef F, Khan AW, Davidson BR: Disseminated bony metastases following incidental gallbladder cancer detected after laparoscopic cholecystectomy. *HPB (Oxford)*, 2003; 5(4): 258–60
7. Sameer G, Naseem A, Vijay K et al: Skeletal metastasis in gallbladder cancer from a high-volume tertiary care center of north India: A series of rare occurrence. *J Gastrointest Cancer*, 2015; 46(1): 36–41
8. Onwuchekwa RC, Jamabo RS, Elewo SN: Gallbladder carcinoma with skeletal metastasis in a Nigerian woman: A case report and review of literature. *Niger Postgrad Med J*, 2013; 20(1): 66–69
9. Puranik AD, Purandare N, Agrawal A et al: Bone marrow metastases in an otherwise operable gall bladder cancer: Rare site of distant metastases detected on FDG PET/CT. *Clin Nucl Med*, 2014; 39(2): e169–72
10. Chaudhari S, Hatwal D, Bhat P: A rare presentation of gallbladder carcinoma metastasis. *J Clin Diagn Res*, 2014; 8(6): FD19–20