

## Solitary Osteolytic Skull Metastasis in a Case of Unknown Primary Being latter Diagnosed as Carcinoma of Gall Bladder

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### Abstract

Disseminated blood borne metastases from carcinoma of the gall bladder are uncommon and occur late in the course of the disease. Of all the distant sites that can be involved by the metastatic disease, the skeletal system is the least commonly involved. Skeletal metastasis in a case of carcinoma gall bladder is rare to find and when it is associated with solitary skull metastasis it is even rarer. we report an unusual case of osteolytic skull metastasis as the only site of metastasis diagnosed by Magnetic resonance imaging and Computed tomography imaging, from an unknown primary which was diagnosed latter as carcinoma of gall bladder.

Our case report emphasize the need of a well-organized cohort study in skeletal metastasis in carcinoma of gall bladder with emphasis on whether to include bone scan or Computed tomography scan as routine protocol or not and if excision of this solitary metastasis improves quality of life of the patient in a resectable stage of carcinoma gall bladder.

**Keywords:** Skull Metastasis; Carcinoma Gall Bladder; Skeletal Metastasis

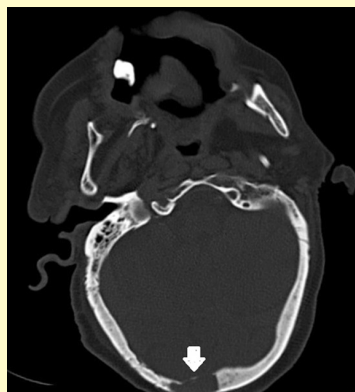
### Introduction

Disseminated blood borne metastases from carcinoma of the gall bladder are uncommon and occur late in the course of the disease. Of all the distant sites that can be involved by the metastatic disease, the skeletal system is the least commonly involved. [1] To date there have only been a few case reports of bone metastasis in carcinoma gall bladder at the time of presentation. However, one autopsy series has reported about 10% incidence, which may indicate that the carcinoma gall bladder does metastasize to bone, perhaps in advanced stages. [14] Bone metastasis in carcinoma of gall bladder has been rarely reported but skull metastasis at the time of initial presentation is an unknown phenomenon. This report describes this unusual case of osteolytic skull metastasis as the only site of metastasis diagnosed by Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) imaging, from an unknown primary which was diagnosed latter as carcinoma of gall bladder [1].

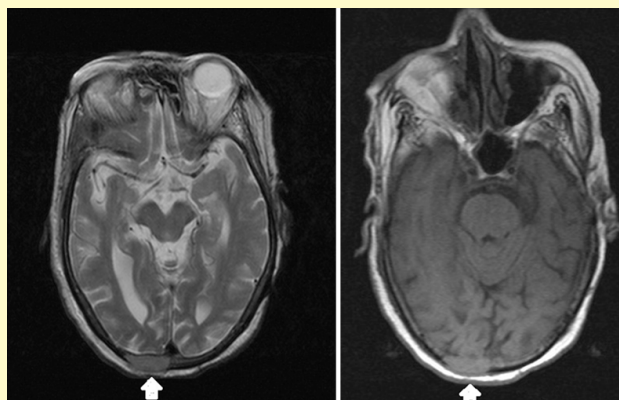
### Case History

A 98-year-old female presented to emergency with altered sensorium and was referred for CT scan of brain and meanwhile blood investigations were sent. CT scan (plain) showed a well-defined osteolytic lesion with sharp margins in right occipital bone. (Figure 1) Due to high serum creatinine levels post contrast CT scan couldn't be done. As the lesion was well defined, in a 98 year old female CT scan was inconclusive, and therefore further imaging of the lesion was done with MRI. MRI showed a T2 isointense, T1 hypo intense well defined lesion in the intra-diploic space with moderate post contrast enhancement in the right occipital bone. (Figure 2a, b and 3a, 3b) No diffusion restriction on DWI or blooming on GRE was noted. Chest x-ray revealed no abnormality.

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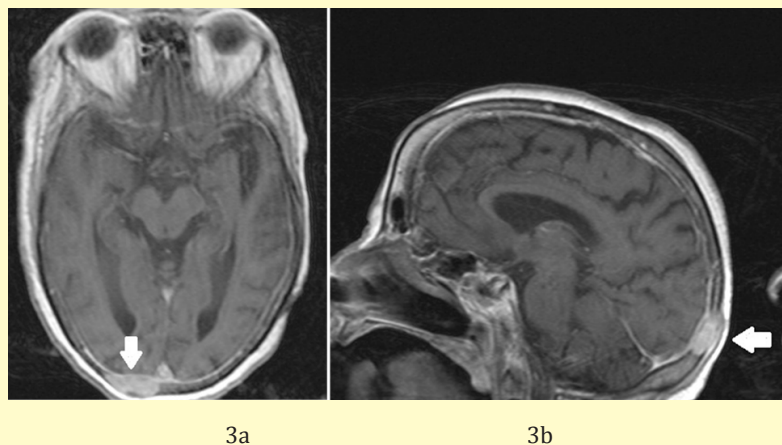
**Figure 1:** A 98-year-old female presented to emergency with altered sensorium showing solitary osteolytic skull metastasis in a case of unknown primary being latter diagnosed as carcinoma of gall bladder. Unenhanced axial CT scan of the brain with bone algorithm (white arrow) showing osteolytic lesion in the intra-diploic space of the right occipital bone.



**Figure 2a-2b:** A 98-year-old female presented to emergency with altered sensorium showing solitary osteolytic skull metastasis in a case of unknown primary being latter diagnosed as carcinoma of gall bladder. MRI T2 and T1 axial image (white arrow) at the level of mid brain show isointense lesion in the intra-diploic space of the right occipital bone without involvement of the subcutaneous tissue or brain parenchyma.

Liver function tests revealed serum bilirubin 8.9 mg%, ALT 56 IU/L and alkaline phosphatase 90 IU/L. For evaluation of hepatobiliary system patient was referred for ultrasonography. On ultrasonography there was a mass lesion in gall bladder fossa with adjacent hepatic and common bile duct infiltration causing moderate intrahepatic biliary radical dilatation with portal lymph nodes. There was no other visceral lesion, disseminated lymph nodes or ascites elsewhere in the abdomen. This osteolytic scalp lesion was radiographically labelled as solitary metastasis from carcinoma of gall bladder. To confirm CT chest and abdomen was done which revealed no other visceral as well as skeletal metastasis. A FDG PET/CT was planned but could not be done due to deranged electrolytes levels and altered sensorium, patient was admitted to intensive care facilities and unfortunately patient expired after 5 days due to failure in maintaining

electrolyte homeostasis. On autopsy external examination showed a hard swelling of the scalp region. Furthermore, gall bladder mass was histopathologically diagnosed as adenocarcinoma. Three peri-portal lymph nodes of size less than 6 mm were found to be reactive in etiology with no metastatic infiltrates. On autopsy scalp lesion was confirmed as metastasis of adenocarcinoma. Rest of the internal examination of body cavity was normal.



**Figure 3a-3b:** A 98-year-old female presented to emergency with altered sensorium showing solitary osteolytic skull metastasis in a case of unknown primary being latter diagnosed as carcinoma of gall bladder. MRI post contrast axial T1 image (white arrow) at the level of midbrain show moderately enhancing lesion in the intra diploic space of the right occipital bone. MRI post contrast sagittal image (white arrow) show the corresponding bone lesion which is well defined without involving the extra cranial compartment.

### Discussion

Disseminated blood borne metastases from carcinoma of the gall bladder are uncommon and occur late in the course of the disease. Of all the distant sites that can be involved by the metastatic disease, the skeletal system is the least commonly involved. [1] To date there have only been a few case reports of bone metastasis in carcinoma gall bladder at the time of presentation. However, one autopsy series has reported about 10% incidence, which may indicate that the carcinoma gall bladder does metastasize to bone, perhaps in advanced stages. [14] Bone metastasis in carcinoma of gall bladder has been rarely reported but skull metastasis at the time of initial presentation is an unknown phenomenon. This report describes this unusual case of osteolytic skull metastasis as the only site of metastasis diagnosed by Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) imaging, from an unknown primary which was diagnosed latter as carcinoma of gall bladder. Distant metastasis from gallbladder carcinoma occurs most frequently in the liver and regional lymph nodes. Although metastases from the gallbladder can occur in almost every organ (including liver, lymph nodes, adrenal glands, kidneys, spleen, brain, breasts, thyroid, heart and uterus), metastasis to the skeletal system is the least frequent. [3, 4] Hence, Bone scan is not a routine investigation for the work up of this cancer. [2] To our knowledge there are only a few case reports of gall bladder carcinoma with skull metastasis in the literature. [5, 6] The case described here has a skull metastatic mass as the presenting finding that lead to the diagnosis of asymptomatic gallbladder carcinoma. It is a rare presentation of Gall bladder carcinoma as our patient was not having any complaint regarding the primary site of cancer. [5, 7-9] In our case bony metastases was osteolytic as commonly seen in gallbladder bone metastases. Some of the literature does show the presence of osteoblastic metastases. [1] The present case report and reports of some others [1, 6, 10, and 11] shows bone as the only distant site of metastasis. Moreover, gall bladder carcinoma carries a poor prognosis. Early detection and complete surgical resection is the only definite cure. There are a few case reports [7, 12, 13, 15] demonstrating the importance of complete surgical resection of solitary metastasis for improving the prognosis of gall bladder cancer. Sheela., *et al*

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reported a case of carcinoma gall bladder with solitary metastasis of greater trochanter of femur and underwent wide excision of the femoral lesion. Patient was advised chemotherapy due to unresectable large gall bladder mass and succumbed to multiple metastases from carcinoma gall bladder eight months later. [7] Another report of two cases of gallbladder carcinoma with a single lymph node involvement behind biliary tract were resected and were found to be recurrent free for more than 22 months and 15 months, respectively. [12] Further, solitary metastasis has been reported to brain and breast from carcinoma gall bladder followed by resection with good prognosis. [13,15]

### Conclusion

There are no case reports illustrating the role of complete surgical resection in solitary skeletal metastasis even when there are multiple cases reported of solitary skeletal metastasis in literature in carcinoma of gall bladder. Our case report emphasize the need of a well-organized cohort study in skeletal metastasis in carcinoma of gall bladder with emphasis on whether to include bone scan or CT as routine protocol or not and if excision of this solitary metastasis improves quality of life of the patient in a resectable stage of carcinoma gall bladder in different age groups. In advanced malignancy presenting in old age treatment may not be curative but palliation is necessary for these patients so that they can live a good quality of life and not die in pain and agony from the advanced disease.

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