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journal homepage: www.casereports.comCardiac metastasis from gallbladder carcinoma[☆]Mallikarjun Gunjiganvi^{a,*}, Ksh Kala Singh^b, H.S. Harsha^c, Th Bipin^d^a Department of Surgery, Regional Institute of Medical Sciences, Imphal, India^b Cardiothoracic and Vascular Unit, Department of Surgery, RIMS, Imphal, India^c Department of Surgery, RIMS, Imphal, India^d Department of Histopathology, Babina Diagnostics, Imphal, India

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ABSTRACT

INTRODUCTION: Primary gallbladder carcinoma is a rare aggressive neoplasm of elderly with poor prognosis. The tumour is often unresectable at the time of diagnosis. Metastasis to heart is rare and only 6 cases have been reported in the indexed literature. We herein report a case of gallbladder carcinoma metastasizing to heart.

PRESENTATION OF CASE: A 54 year old female presented with dyspnoea and chest pain with past history of radical cholecystectomy and palliative chemotherapy for adenocarcinoma of gallbladder. Chest X-ray showed cardiomegaly and 2-D ECHO revealed features of tumour deposits on the surface of myocardium and malignant pericardial effusion. Mini-thoracotomy and pericardial window procedure was done to relieve distressing symptoms and biopsy of pericardial tissue revealed metastatic adenocarcinoma. In spite of intensive care, patient succumbed to disease in the post-operative period.

DISCUSSION: Primary adenocarcinoma of gallbladder is the most common malignancy of biliary tract and fifth most common malignancy of gastro-intestinal system with dismal prognosis. It most commonly spreads to liver and regional lymph nodes, very rarely distant metastasis occurs to kidney, adrenal, thyroid and bones as reported in the literature. Metastasis to heart presents with symptoms of cardiac failure due to pericardial effusion. Even with intensive care patients will invariably succumb to the disease.

CONCLUSION: Metastatic spread to heart from carcinoma of gallbladder is very rare. Should a patient be suspected of or an operated case of gallbladder carcinoma present with symptoms of congestive heart failure and massive pericardial effusion, cardiac metastasis should be considered.

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1. Introduction

Primary carcinoma of the gall bladder is a rare aggressive malignant disease predominantly occurring in the older age group.¹ It is associated with poor prognosis if diagnosed at advanced stage when curative resection is not possible. Carcinoma of the gall bladder can metastasize by lymphatic, haematogenous or direct extension into the surrounding structures. It spreads mainly to the liver and regional lymph nodes along the cystic duct, common hepatic duct and common bile duct and to pre and para-aortic lymph nodes but distant metastasis has also been explained in the literature.^{2,3} Here in we report a case of carcinoma of the gallbladder metastasizing to the heart and presenting with features

of malignant pericardial effusion. This is 7th such case to report cardiac metastasis from gallbladder carcinoma.

2. Presentation of case

A 54 year old female patient was admitted in 2013 in Cardiothoracic and Vascular Unit with complains of difficulty in breathing and chest pain with history of laparoscopic cholecystectomy in 2009 for symptomatic gall stone disease detected on ultra-sound (USG) examination. Resected specimen showed grossly thickened wall near the neck and microscopically well differentiated adenocarcinoma with pathological pT2N0Mx stage AJCC (American Joint committee on Cancer), 7th edition. Following this patient was subjected for revision surgery – open radical cholecystectomy. The histopathological examination of the dissected porta hepatis lymph nodes showed metastatic adenocarcinoma with perinodal extension. Post-operatively palliative chemotherapy consisting of 12 cycles of GEMOX regimen (TMH protocol – Tata Memorial Hospital, Mumbai) was given. Follow up contrast enhanced computed tomography (CECT) of abdomen after completion of adjuvant chemotherapy was normal.

At admission, chest X-ray (Fig. 1) showed cardiomegaly with diffuse mild interstitial thickening in bilateral lung fields.

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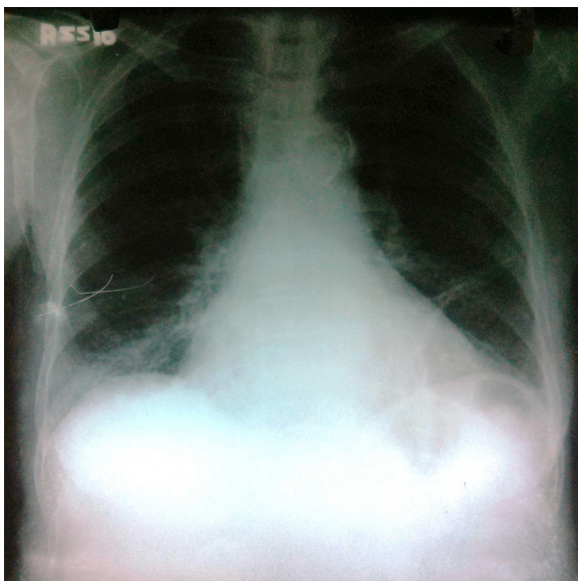


Fig. 1. Chest X-ray showing cardiomegaly.

Electrocardiogram showed sinus rhythm with low voltage complexes. 2-D echocardiography (ECHO) showed moderate pericardial effusion (13 mm). USG whole abdomen was done to look for tumour recurrence. USG (abdomen) showed post cholecystectomy status with bilateral pleural effusion and moderate pericardial effusion. Serum carcino-embryonic antigen (1.0 ng/mL) and alpha-fetoprotein (2.5 IU/mL) were within normal limits. Patient was started on conservative treatment for the pericardial effusion. However, patient's condition worsened with increase in severity of dyspnoea and orthopnoea. Repeat 2-D ECHO (Figs. 2 and 3) showed massive pericardial effusion, metastatic tumour deposits on the surface of myocardium and left sided pleural effusion. Initially repeated transcutaneous pericardiocentesis was done. However, analysis of this haemorrhagic pericardial fluid for malignant cells was negative. Patient was subjected for mini-thoracotomy, and pericardial window procedure was done under general anaesthesia due to worsening symptoms. Massive pericardial effusion was drained and biopsy of pericardial tissue was sent for histopathological study. The report revealed metastatic adenocarcinoma: "fibro-adipose collagenous tissue with focal areas of benign mesothelial lining, stroma infiltrated by malignant tumour composed of cells arranged in infiltrating singles, cords, clusters and occasional well-formed glandular pattern, individual cells have

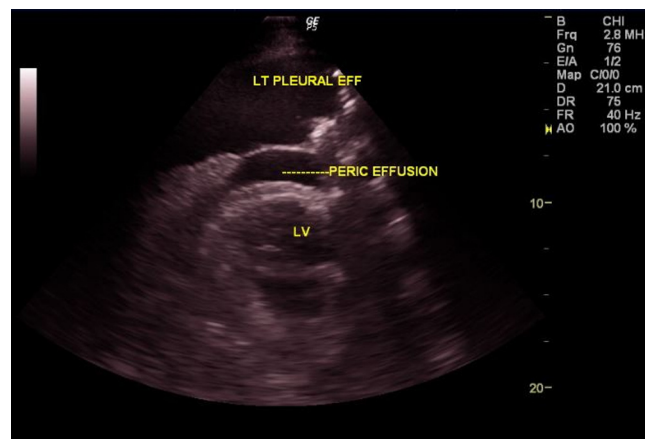


Fig. 3. Echocardiography showing massive pericardial effusion.

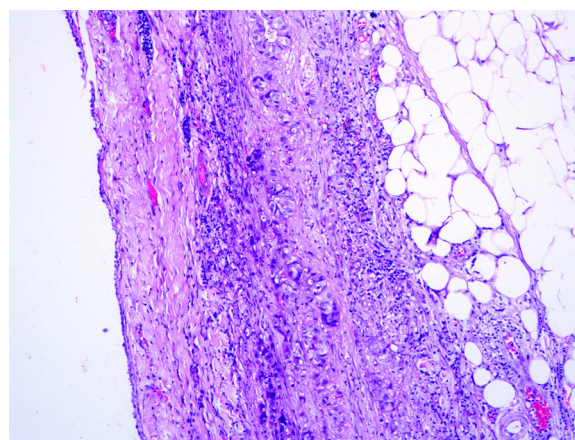


Fig. 4. Pericardium with mesothelial lining by the tumour cells HE 100x.

moderate amount of cytoplasm and highly pleomorphic vesicular nuclei, intervening stroma shows moderate lympho-plasmocytic cell infiltration" (Figs. 4 and 5). Even with palliative procedure, patient succumbed to the disease in the post-operative period due to progressive dyspnoea and acute respiratory distress syndrome.

3. Discussion

Primary carcinoma of the gall bladder is a rare malignant disease but is the most common neoplasm of the biliary tract and 5th

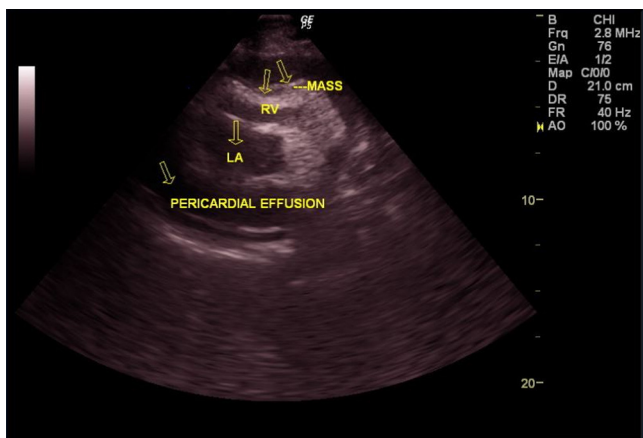


Fig. 2. Echocardiography showing tumour over myocardial surface.

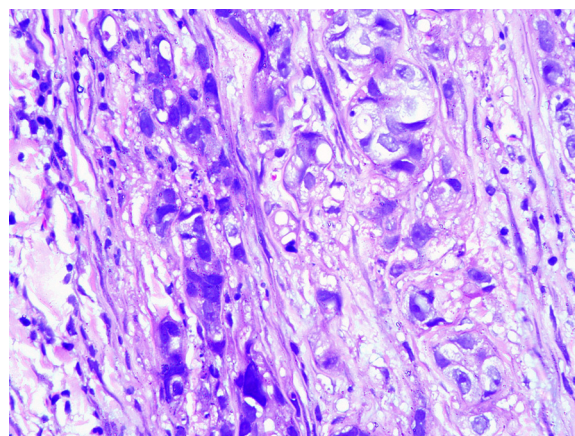


Fig. 5. Tumour cells in glandular pattern HE 200x.

most common neoplasm of gastro-intestinal (GI) tract.¹ It accounts for 2–4% of all malignant GI tumours. Carcinoma of gall bladder can metastasize by lymphatic, haematogenous or direct extension into the surrounding structures. It spreads mainly to the liver and regional lymph nodes along the cystic duct, common hepatic duct and common bile duct and to pre and para-aortic lymph nodes. But distant metastases to the adrenal, kidney, brain, skin, breast, thyroid, heart and orbit which have been explained in the literature.^{2–4}

There have been 6 cases reported cases in the indexed literature.^{5–7} Metastatic involvement of the heart is either by haematogenous, lymphatic or direct spread. Haematogenous spread most commonly affects the myocardium whereas the pericardium is involved in lymphatic spread of any tumour to the heart.⁴ The involvement of the heart by gallbladder carcinoma though is rare can occur from all three routes but usually by the lymphatics i.e. retrograde flow of lymph through the broncho-mediastinal lymphatics.⁸ In our case, since primary tumour was resected approximately three years back and post-operative palliative chemotherapy was given, the tumour at the primary site must have recurred to cause the lymphatic spread. But the recurrence at the primary site was not detected on routine ultrasound examination. Contrast computed tomography or magnetic resonance studies could not be done because of poor general condition of the patient.

Clinically, cardiac metastases are often silent when the metastases are small. Cardiac involvement is often noticed at autopsy. Dyspnoea, tachypnoea, retrosternal pain, systolic heart murmurs, peripheral oedema and pleural or pericardial effusion are the clinical features. Pericardial effusion can be sero-sanguinous or haemorrhagic in nature. Rapid increase in volume can cause tamponade effect necessitating immediate pericardiocentesis. Tumour replacement of myocardium can provoke conduction defects, arrhythmias, syncope, angina pectoris, syncope and sudden death. Intracavitary growth can cause cardiac chamber obliteration and inflow or outflow tract obstruction. ECG is usually non-specific or sometimes rhythm disturbances, conduction defects or low voltage complexes can be seen. CXR shows pericardial effusion, peri- and/or paracardial tumour growth and pleural effusion. The method of choice to detect cardiac metastases is 2-dimensional echocardiography with high sensitivity and it can detect pericardial fibrous bands, tumour deposits on the myocardial surface and regional wall motion abnormalities. Treatment is mainly palliative to improve quality of life in the form of percutaneous pericardiocentesis percutaneous balloon pericardiostomy, pericardial window and pericardiectomy.⁹

4. Conclusion

Metastatic spread to heart from carcinoma of gallbladder is very rare. Should a patient be suspected or an operated case of gallbladder carcinoma presenting with symptoms of congestive heart failure and malignant pericardial effusion, cardiac metastasis should be considered in the differential diagnosis.

Conflict of interest statement

None declared.

Funding

None declared.

Ethical approval

Taken “Written informed consent was obtained from the patient’s guardian for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request”.

Author contributions

Dr. Mallikarjun Gunjiganvi did study design, data collection and analysis, writing, final editing. Prof. Ksh Kala Singh did study design, data analysis, final revision. Dr. H.S. Harsha did data collection, revision. Dr. Th Bipin did image retrieval and data collection.

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