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Case Report

PET-CT is not "Sine-Qua-Non" for Advanced Gallbladder Cancer: A Case Report with Review of Literature

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Abstract

Gallbladder Carcinoma (GBC) is the most common and aggressive tumor of the biliary tract [1]. Patients are typically diagnosed during advanced stages, and the mean overall survival is short 5-year survival rate of 20 % as per the Surveillance, Epidemiology, and End Results (SEER) database [2]. Given its sensitivity and sensitivity Positron Emission Tomography-Computed Tomography (PET-CT) is the investigation of choice especially for diagnostic dilemmas and metastatic disease. We report a case in which despite having locally advanced GBC, PET CT failed to detect both local involvement and lymph node metastasis but aggressive approach enabled complete resection of locally advanced GBC.

Keywords: PET-CT; Gallbladder Cancer; Metastasis

Case Summary

A 58-year-old elderly lady with Diabetes Mellitus and hypertension came to us with chief complaints of pain in abdomen on and off for 2 weeks. Abdominal Ultrasound (USG) was suggestive of chronic cholecystitis with irregular diffuse gall bladder wall thickening. Due to high index of suspicion, especially in a high prevalence area for GBC, triphasic CT done which was suggestive of chronic cholecystitis and non-specific liver lesion not suggestive of metastasis (Figure 1).

PET CT revealed chronic cholecystitis with pericholedochal and aortocaval lymph node enlargement but with low maximum standardized uptake value (SUVmax) of 3.1 and 2.3 respectively at delayed scan (Figure 2). There was also an ill-defined hypodense lesion in liver segment 4A but without features of metastasis and low SUV.

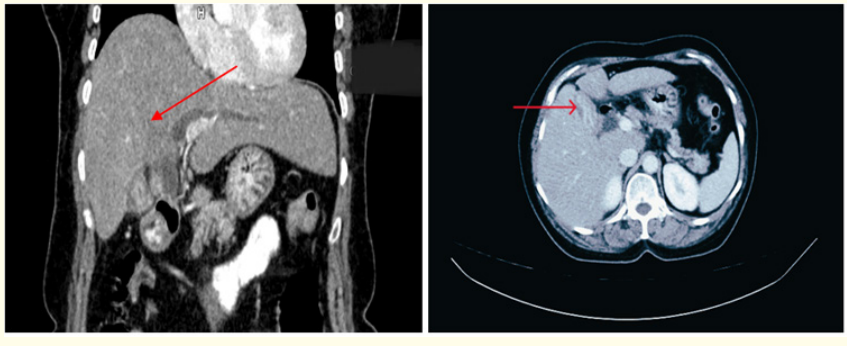

Figure 1: Triphasic CT was also suggestive of chronic cholecystitis and non-specific liver lesion not suggestive of metastasis. Arrow showing gallbladder, right pic- coronal section and left pic-transverse plane.

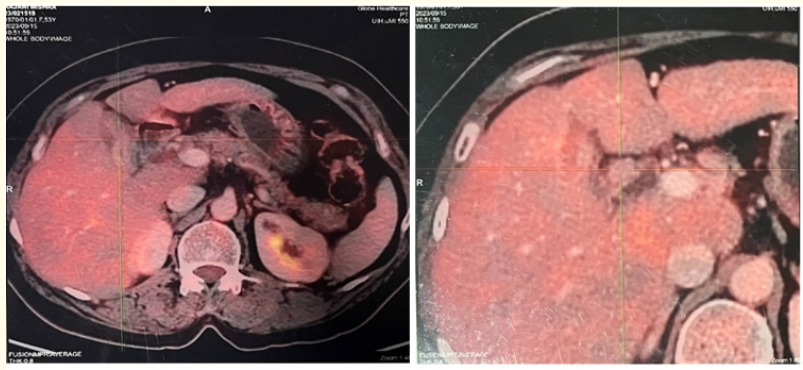

Figure 2: Positron Emission Tomography-Computed Tomography (PET-CT) of our patient with normal finding.

Carbohydrate antigen 19-9 (CA 19-9) was extremely high at 11849 U/ml. Due to high suspicion of malignancy despite negative PET CT, Fine Needle Aspiration Cytology (FNAC)was done from Gall bladder (GB) and segment 4 lesion which was inconclusive and showed scant atypical cells. Open Cholecystectomy was performed in view high suspicion of malignancy. Operative findings revealed shrunken and thickened GB, cirrhotic liver without any obvious metastasis and no ascites or peritoneal metastasis. GB was sent for Frozen section histopathology which was highly suggestive of malignancy. We proceeded with liver resection and radical lymph node dissection. Postoperative recovery was uneventful. Final Histopathology examination (HPE) revealed adenocarcinoma with negative cystic duct margin with positive cystic node and negative liver margins. R0 resection was achieved with a pathological staging of pT3N1M0. Patient is currently on follow up and under review for adjuvant therapy.

Discussion

GBC is a rare malignancy but is found more commonly in north India [3]. Its long-term survival is low [4] and is usually unresectable at presentation [5]. PET CT is a highly sensitive (100%) and specific (91.7%) investigation in GBC [6]. It is especially useful in cases with diagnostic dilemma as in our case discussed above. Tumor markers in case of GBC are often non-specific [7,8], however in our case CA 19-9 was grossly elevated to more than 11000 ng/ml. CA19-9 levels in GBC are nonspecific with sensitivity of 70% [9]. This prompted our aggressive approach in this case with the decision to do a frozen section and open cholecystectomy. The intra-operative findings showed no evidence of metastasis, but thickened and shrunken gall bladder with enlarged cystic node were seen. We were able to achieve a R0 resection with negative cystic duct and liver margins due to high index of suspicion leading to an aggressive approach. This case demonstrates that PET-CT is not "sine qua non" for ruling out GBC as negative PET CT findings may miss advanced malignancy. Pathological staging of pT3N1 is significant and shows the pitfalls of ignoring clinical suspicion in favor of modern advanced investigations.

A study by Ramos-Font., *et al.* [6] which included 49 patients found high diagnostic accuracy of PET-CT of around 95.5% in GBC metastasis. A meta-analysis published in 2019 by Lamarca A., *et al.* [10] included 2125 patients showed high sensitivity (91.7%) of PET-CT in diagnosing primary GB malignancy and provided evidence to support the incorporation of 18FDG-PET into the current standard of care for staging the lymph node status and distant metastases. Similar conclusion was drawn in another study done by Arslan., *et al.* [11]. A prospective study done by Goel., *et al.* [13] in 2020 including 149 patients showed role of PET-CT in preoperative staging in GBC. Current NCCN guidelines also suggest role of incorporating PET-CT in Gallbladder malignancy if CT findings are unequivocal .However, many studies have quoted lesser sensitivity of 75–87% and specificity of 50-87.5% in diagnosing gallbladder cancer on PET-CT [12,14].

SEER* stage	5-year relative survival rate
Localized	69%
Regional	28%
Distant	3%
All SEER stages combined	20%

Figure 3: Surveillance, Epidemiology, and End Results (SEER) database latest survival rate in GBC.

Conclusion

Given the high incidence of GBC in north India [3], we suggest that any suspicious finding on ultrasound must be thoroughly investigated as early GBC has good 5 year survival around of 69% (Figure 3) [2]. A negative PET-CT or even normal tumor markers should not obviate aggressive approach in early GBC in cases where there is high index of suspicion for malignancy.

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