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Brain Metastasis in Carcinoma Gallbladder – A Rare Case Report

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Abstract
Gallbladder cancer is an aggressive cancer with early dissemination to liver and lymph nodes, but metastasis to brain is rare. Here, we described a case of gallbladder cancer which subsequently developed brain metastasis for which whole brain radiotherapy was given and palliative chemotherapy was continued. She tolerated the whole treatment well and at present (4 month after WBRT) leading a normal life with performance status 1-2 till last report and on palliative chemotherapy for residual gallbladder cancer.
Keywords: *Brain Metastasis in Carcinoma gallbladder, Carcinoma Gallbladder, Brain Metastasis.*

Introduction

Gallbladder cancer is the most common of all the biliary tract cancers and is fifth most common of the gastrointestinal tract. In India, gallbladder cancer is most prevalent in northern and north-eastern states of Uttar Pradesh, Bihar, Orissa, West Bengal and Assam.[1]

Analysis from SEER data from 1973 to 2009 showed that out of total cases diagnosed, the proportion of cases that are diagnosed as distant disease (Vs regional and localized disease) is increasing over time.[2] Brain metastasis in carcinoma gallbladder is extremely rare and only 8-10 cases are reported in English literature.

Here, we present a case of carcinoma gallbladder which subsequently developed brain metastasis, managed with whole brain radiotherapy and combination of chemotherapy.

Case History

A 60-year old post-menopausal woman from Siwan district of Bihar (India) presented to Mahavir Cancer Sansthan, Patna on 31-10-2016 with complain of right hypochondrial pain for last 1 month, which was progressive in nature. Physical examination revealed no abnormality besides the right upper quadrant abdominal pain. The patient had a prior CT Scan Abdomen dated 26-10-2016, on which the gallbladder appeared slightly distended with radiodense, irregular asymmetric thickening in distal body near neck as well as increased attenuation of the pericholecystic fat, subtle adjacent liver infiltration and subtle focal wall thickening of adjacent colon without narrowing or dilatation. Multiple necrotic porta, peripancreatic and pre/para aortic lymph-nodes partially encasing the

renal vessels as well as compressing the adjacent portal vein and IVC. Few adjacent satellite hypodense liver nodules. FNA from liver was done which showed metastatic adenocarcinoma. Baseline CA 19.9 > 1200.0 U/ml.

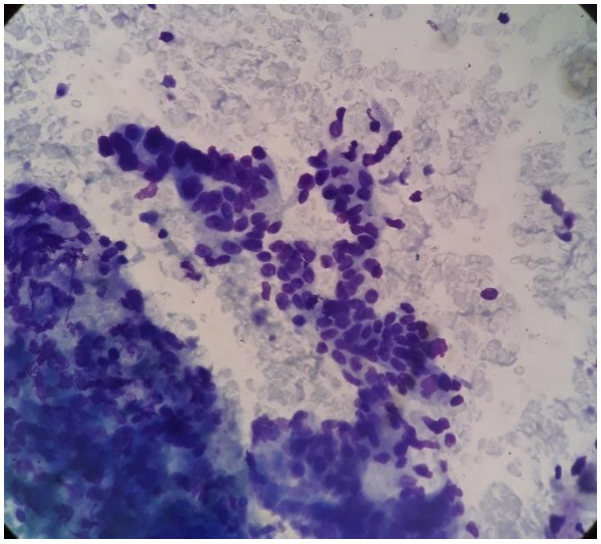

Fig 1: FNA liver SOL showing metastatic adenocarcinoma

Palliative chemotherapy Gemcitabine & Cisplatin based regimen & received 6 # of the same uneventfully. Ultrasound whole abdomen was done which showed 41.6 x 27.6 mm size heterogeneous mass in GB with few adherent calculi and no liver metastasis. Now, single agent capecitabine started. After 6 # of the same CECT whole abdomen was done which showed 14 x 16 mm size ill-defined heterogeneously enhancing mass involving the body of gallbladder. A 9 mm poorly non-enhancing hypodense focal lesion in the left lobe of liver. I/V/O good response with capecitabine the same chemotherapy (capecitabine) continued. During 8th cycle of capecitabine the patient developed left sided hemiplegia with headache and vomiting. On suspicion of some brain pathology CEMRI Brain was done on 20-10-2017, which shows there are three well defined moderate heterogeneously enhancing intraaxial mass lesions involving right frontal and parietal lobes as well as left posteroinferior temporal lobe at grey white junction. The largest lesion measures 2.9 x 2.6 x 2.4 cm in size in the right high frontal lobe with disproportionate white matter edema and significant mass effect. MRI imaging s/o metastasis with disproportionate edema and mass effect.

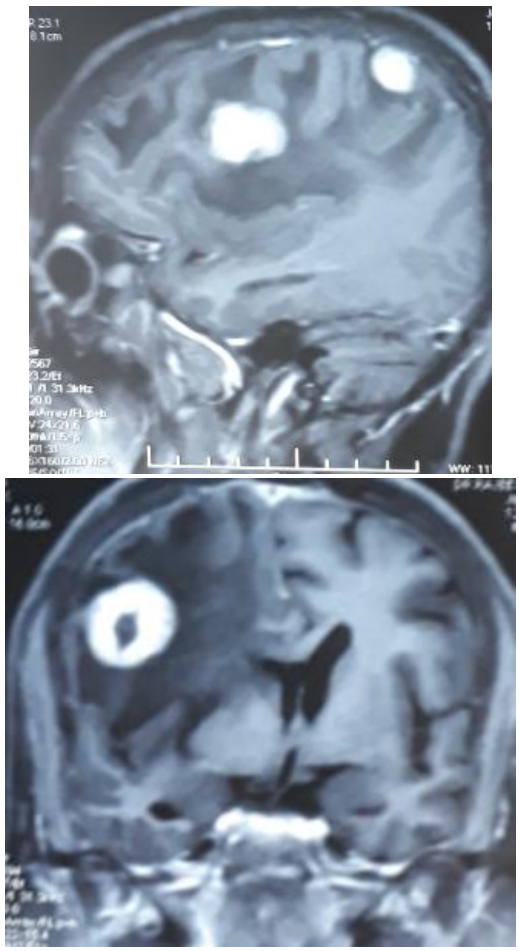

Fig 2: MRI Brain showing multiple brain metastasis

Whole brain RT (by Co-60) by German helmet technique planned (30 Gy/10#) and given from 24-10-2017 to 07-11-2017 uneventfully.

Fig 3: Whole Brain Radiation by Germen Helmet Technique

Ultrasound whole abdomen was done on 18-12-2017 which showed 71.1 x 40.6 mm size heterogeneous mass in gallbladder. Liver was normal. In view of disease progression GEMOX regimen planned. She received 1st cycle of the same chemotherapy uneventfully. Till last reporting she is doing well and we wish her to speedy recovery.

Discussion

Gall bladder cancer is characterised by local and vascular invasion, extensive regional lymph node metastasis and distant metastasis. Gallbladder cancer is also associated with shorter median survival duration, a much shorter TTR, and shorter survival duration after recurrence.[3]

Sons et al.[4] reported distant metastases in 92% of patients at autopsy, mostly to the para-aortic and portal lymph nodes, liver, lung and peritoneum. Brain metastasis arising from primary gallbladder tumor is extremely rare and only 4 cases [5, 6,7,8,] have been reported in the English literature since 1980. Other anatomical sites of CNS metastases were the meninges and venous sinuses, without intracerebral or intracerebellar metastasis. [9, 10,] Another two studies had reported brain and bone metastasis both. [11, 12,]

The median survival of patients with CNS metastasis is 3-12 months and is not necessarily compromised by the CNS lesion.[13] Patients with solitary brain metastasis from gall bladder cancer can achieve a better outcome and longer survival after removal of a brain metastasis if there is no other metastasis. In the case of Takano *et al.*[5] solitary brain metastasis from gallbladder carcinoma was completely removed 4 months after operation for the primary tumor. Planned chemotherapy was then given to prevent recur-ence. She was leading a normal life 4 years later.

In all previous reports, the patients either underwent surgical excision for single brain lesion followed by radiotherapy or whole brain radiotherapy for multiple brain metastasis.

Two another report- Rare case of gallbladder cancer presenting with metastasis to bone and brain in an African American male discovered by F18-FDG PETCT by Az. Win et al. [11] no any treatment was taken by the patient and died very early. In another report by Raghvendra Gupta et al. [12] gallbladder cancer presenting with brain and bone metastasis: case report, patient had not received any treatment and lost to follow up.

In our case, the patient was on chemotherapy for carcinoma gallbladder with liver metastasis then he developed headache and vomiting followed by left hemiplegia. On suspecting some brain pathology CEMRI brain was done which s/o metastasis with disproportionate edema and mass effect. We have planned whole brain RT by Germen helmet technique. 30 Gy in 10 fractions by Co-60 was given with low dose of dexamethasone. Patients responded very well with WBRT and at present (4 month after WBRT) this patient is doing well and on palliative chemotherapy and her ECOG status is 1-2. Survival in patients with brain metastasis from GI cancer was found to be diminished compared with metastasis arising from the breast, lung or kidney. Study have shown that early treatment which is best achieved with surgical resection and/or WBRT has been linked to prolonged survival and improvement in clinical symptom and quality of life.

Conclusion

Brain metastasis in case of gallbladder cancer almost always associated with systemic metastases. Prognosis is poor, and treatment is generally palliative. The treatment plan in patients with single/multiple brain metastases needs to be individualized to provide palliation of symptom with improvement of quality of life; without adding treatment related complications.

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