Case 431

3. Drug-induced hepatitis

【Progress】

Administration of anti-cancer drugs has halted. He is in a state of observation.

【Discussion】

Drug induced hepatic injury is categorized into three patterns: hepatocellular pattern, cholestatic pattern, mixed pattern. Hepatocellular pattern indicates that AST values are more than 5 folds than upper normal limits or AST/ALP ratio more than 5 folds. Cholestatic pattern indicates that ALP values are more than 2 folds or AST/ALP ratio more than 2 folds. Mixed pattern indicates that the ratio of AST/ALP is more than 2 folds and less than 5 folds (1, 2).

As cholestatic pattern, Tizanidine, an agent of non-steroid anti-inflammatory drug for cervical brachial syndrome is known to cause drug-induced liver injury. Biliary tract dilatation with peri-Glisson edema and/or gallbladder mural edema is depicted on CT (1-3). Sinusoidal obstruction syndrome, once called Veno-occlusive disease is caused by chemotherapy, anti-tumor effect, oxaliplatin, cisplatin and/or S1(fluoropyrimidine derivative) for digestive organ cancer (4-7). These drugs interruption of DNA synthesis that bring out anti-tumor effect but as adverse effect, affect sinusoid endothelium disorder, inducing sinusoid obstruction. It induces low-attenuation area in liver parenchyma on CT and signal change (low signal intensity with irregular margin on T1WI and patchy high signal intensity on T2WI) with vessel traverse sign, irrespective of lesion sizes (4-7). Oxaliplatin also creates focal nodular hyperplasia-like lesion in the liver that is depicted as hyper vascular lesion on arterial phase and iso-signal intensity on hepatobiliary phase. Hepatic adenoma which is depicted as a hyper-vascular nodule in women is known to arise after being given contraceptive agents (8). It is known that the cease of contraceptive agents induces the decrease in size of hepatic adenoma (9). It is often encountered that anticancer drugs such as Irinotecan for colon cancer induce fatty liver degeneration that CT values decrease and signal intensity of liver parenchyma on MRI out of phase decreases compared with on MRI in phase (1-3). Based on my experiences, this pattern of drug hepatic liver injury is most encountered. Amiodarone, agents containing iodine for atrium fibrillation or ventricular fibrillation induce hepatic toxicity, histologically interstitial inflammatory changes with fatty changes or necrosis. Amiodarone with hepatic toxicity is depicted as high attenuated liver on CT because of amiodarone containing iodine.

As diseases with vessels penetrating sign on CT and/or MRI, drug induced hepatic injury, malignant lymphoma, inflammatory pseudotumor, early stage- hepatocellular carcinoma, cholangial-cellular carcinoma, are listed.

In our case, he took FOLFIRI +Zaltrap for colon cancer. Zaltrap is agent of blocker of Vascular Endothelial Growth Factor. A while after administration, multiple low attenuation lesions with vessels traverse sign in the liver, were depicted on CT. Those lesions with slightly high attenuation are depicted on fat-suppression T2WI, Diffusion WI also with vessels traverse sign. These images are compatible with drug-induced hepatic toxicity.

【Summary】

We presented a fifty-eight-year-old male with epigastric pain. He was given FOLFIRI +Zaltrap for colon cancer. Multiple space occupying lesions with vessels traverse sign in the liver were depicted on CT and MRI, compatible with drug induced hepatic injury. It is borne in mind that drug induced hepatic injury is categorized into cholestatic type, hepatocellular type and mixed type. Hepatocellular type includes sinusoidal obstruction syndrome, focal nodular lesion-type, adenoma type, steatohepatitis, and hemosiderosis.

【References】

1. European Association for the Study of the Liver. EASL Clinical Practice Guidelines: drug-induced liver injury. J Hepatol. 2019;70:1222–61.
2. Hassan A, et al. The diagnosis and management of idiosyncratic drug-induced liver injury. Liver Int. 2019;39:31–41.
3. Vernuccio F, et al. CT and MR imaging of chemotherapy-induced hepatopathy. AbdomRadiol (NY). 2019;44:3312–24.
4. Ünal E, et al. Hepatobiliary phase liver. MR imaging findings after oxaliplatin-based chemotherapy in cancer patients. AbdomRadiol (NY). 2018;43:2321–8.
5. de Lédinghen V, et al. Sinusoidal obstruction syndrome. Clin Res Hepatol Gastroenterol. 2020;44:480–5.
6. Toi H, Miura Y, et al. Hepatic sinusoidal obstruction associated with S-1 plus cisplatin chemotherapy for highly advanced gastric cancer with paraaortic lymph node metastases: report of a case. Clin J Gastroenterol. 2012;5:341–6.
7. Shin NY, et al. Accuracy of gadoxetic acid-enhanced magnetic resonance imaging for the diagnosis of sinusoidal obstruction syndrome in patients with chemotherapy-treated colorectal liver metastases. EurRadiol. 2012;22:864–71.
8. Özcan HN, et al. Hepatocyte-specific contrast-enhanced MRI findings of focal nodular hyperplasia-like nodules in the liver following chemotherapy in pediatric cancer patients. DiagnIntervRadiol. 2020;26:370–6.
9. Park HS, Kim YN. Adverse effects of long-term amiodarone therapy. Korean J Intern Med. (2014) 29:571.

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2026.4.24