

## Acute liver failure due to hepatitis E infection following pembrolizumab therapy for lung cancer

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**Introduction:** Pembrolizumab is a monoclonal antibody against programmed death 1 receptor that disinhibits anti-tumor activity of T-cell. It is used recently for several solid tumors with promising outcomes. We report a rare case of acute liver failure due to hepatitis E infection following two cycles of pembrolizumab for treatment of non-small cell lung cancer.

**Case:** A 72-year-old man was admitted via outpatient department for further evaluation and treatment of asymptomatic acute hepatitis. He had diagnosed as non-small cell lung cancer in right upper lobe with rib invasion 5 months before admission. In history, he had received 2 cycles of pembrolizumab against disease progression after first-line chemotherapy of gemcitabine plus carboplatin. He did not drink alcohol nor take any suspicious agent. Viral markers for hepatitis A, B, C including HBV DNA and HCV RNA were all negative. Imaging study showed decreased tumor burden including local invasion and there was no significant finding on liver dynamic study. Considering the possibility of hidden viral hepatitis, low dose of prednisolone (30 mg per day) was administrated as a presumed diagnosis of immune-mediated hepatitis. On hospital day 14, he showed flapping tremor without mental alteration and laboratory test showed prolonged prothrombin time (international normalized ratio was 2.59). On basis of further detection of IgM and IgG antibodies for hepatitis E virus, diagnosis of acute hepatitis E was confirmed. Worsening hepatic encephalopathy, he was transferred to intensive care unit. Then, mechanical ventilation and three sessions of high-volume plasmapheresis were applied for treatment of acute liver failure. Although laboratory findings were slightly improved, he was deceased for progression of liver failure.

**Conclusion:** We experienced a disastrous case of acute liver failure which was clinically difficult to distinguish between immune-related hepatitis and viral hepatitis after pembrolizumab therapy. Further research is needed for consideration of pre-treatment evaluation of occult or chronic hepatitis E infection in era of immune checkpoint inhibitor.

