

Letters to the Editor

Liver disease and the Diver Medical Participant Questionnaire

The diver medical participant questionnaire created by the Diver Medical Screening Committee (DMSC) provides an established minimum health standard for recreational diving. As keen divers with a background in Hepatology, it seems clear that liver disease is overlooked by this safety standard.

The prevalence of chronic liver disease (CLD) is rising globally - largely driven by an increase in obesity and alcohol consumption. Over one third of the global population (37.5%) are estimated to have steatotic liver disease (SLD), an umbrella term including both alcohol-related liver disease (ALD) and metabolic dysfunction-associated steatotic liver disease (MASLD).¹ Liver disease is typically occult until the later stages but the development of non-invasive diagnostics including transient elastography has changed the landscape with increased focus on early detection and prevention.

The consequences of diving with liver disease can be significant.

It is estimated that 1.3% global population have liver cirrhosis and around one third will have oesophageal varices at diagnosis.² Diving may precipitate variceal rupture by inducing a transient increase in portal pressure. The literature reports a case of massive variceal bleeding in a 29-year-old with cryptogenic liver cirrhosis after two dives to 16 metres of sea water. Treatment entailed a somatostatin analogue and band ligation.³ In our practice, we have identified patients with a known history of portal hypertension and oesophageal varices who had continued to engage in recreational diving due to the lack of sensitivity of the Diver Medical Participant Questionnaire.

Nitrogen and other inert gases are highly soluble in adipose tissue and obesity is a known risk factor for decompression injury (DCI). Divers with SLD are at increased risk of localised inert gas excess. The risk of DCI in this cohort has not been studied but steatotic liver disease is a known non-traumatic risk factor for fat embolism. Local bubble formation may induce rupture of fat cells and potentiate risk of fat embolism in those with SLD.

Diving fatalities are rare but frequently attributed to cardiovascular events. We know that people living with CLD have a twofold greater incidence of cardiovascular disease. In conditions such as lean MASLD (hepatic steatosis with a normal BMI), the background of liver disease may be the only clue to underlying cardiovascular risk and this is currently missed on the Diver Medical Participant Questionnaire.

Portal venous gas (PVG) accumulation is a common finding amongst recreational divers and has been linked to the formation of portal vein thrombosis.^{4,5} Portal vein thrombosis is a known complication of CLD and its prevalence rises with disease severity. The combination of CLD and portal venous gas accumulation secondary to recreational diving may heighten risk of portal vein thrombosis.

In addition to the above, we anticipate significant risk of diving with the complications of CLD including hepatic encephalopathy (HE) and ascites. Both can be subtle to detect but in the hyperbaric environment may contribute to mental obtundation and fluid shifts respectively.

Unlike many chronic illnesses, patients with compensated CLD are frequently managed without specific medications and may not be highlighted by the 'prescription medication' section of the questionnaire.

It is clear from a brief review of recreational diving forums that the combination of liver disease and diving is a consistent query. Given the rising prevalence and inherent risks of diving with chronic liver disease, we advocate for the inclusion of the word 'liver' to question nine of the Diver Medical Participant Questionnaire. It would read "*I have had stomach, liver or intestine problems, including recent diarrhea*". This could be clarified with an additional point in Box G "*I have had chronic liver disease or portal hypertension*".

References

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