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Osteoporosis Screening of Liver Transplant Patients in a Tertiary Urban Medical Center

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Background: Liver transplantation is an established treatment for patients with end-stage liver disease. In 2021 more than 8,400 liver transplants were performed in the United States. Although successful transplantation can reverse many complications of end organ failure, disturbance of bone and mineral metabolism may persist, which can contribute substantially to morbidity and mortality. It is important to assess whether liver transplant patients are getting bone density screening and treatment.

Objective: Our goal is to assess current practice in bone density screening in patients who have undergone liver transplant at our medical center, to identify if these patients are being screened for metabolic bone disease before and after transplant, and to improve management of such patients by initiating a provider work flow that is based on available data and evidence.

Study Design: The first phase was a survey of the liver transplant team to assess the current protocol for screening. The second phase involved retrospective chart review of patients at our institution who had a liver transplant between October 2008 and April 2021. The findings will be used to create an institutional protocol for osteoporosis screening and management.

Results: Survey results: 62.5% of liver transplant providers knew that guidelines or a protocol are being used to screen liver transplant recipients for osteoporosis. 75% said that dual-energy x-ray absorptiometry (DXA) scans are always obtained before liver transplantation, while 25% said they are sometimes obtained. There were mixed results regarding monitoring post transplant. All respondents agreed that creating a protocol for osteoporosis screening would improve outcomes of bone health in transplant patients.

Chart review results: We reviewed 243 liver transplant recipients between October 2008 and April 2021. After excluding duplicate transplants and those less than 18 years old, 234 patients were included in analysis. 59% of patients were men with a median age of 63.5. The most common etiologies of pre-transplant liver disease were Hepatocellular Carcinoma (29%), Hepatitis C (17%), alcoholic cirrhosis (16%) and NASH (5%). 72% of transplant patients had a DXA before transplant and 28% did not. Of those with a pre-transplant DXA, 28% had normal bone density, 50% had osteopenia, and 20% had osteoporosis. The remainder did not have data available. Among those with a diagnosis of osteoporosis pre-transplant, 41% received treatment while 56% did not receive any bone-specific therapy.

Discussion: The majority of providers in our liver transplant team are aware of the need for bone health screening and treatment in liver transplant candidates. Most patients received a DXA prior to transplant however less than half of the patients with osteoporosis were started on treatment. Our study shows the need for developing an institutional work flow to optimize bone health in patients undergoing liver transplant.