SHORT COMMUNICATION

Clinical Cardiology 2020: Alterations in the cardiovascular system in patients with cirrhosis-Assessment of a haemodynamic profile

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ABSTRACT: Cirrhotic Cardiomyopathy (CCM) is a condition concerning heart muscle dysfunction, occurring among patients with cirrhosis. Cirrhosis leads to the development of a hyperdynamic syndrome, which is manifested by high cardiac output, increased heart rate and effective arterial blood volume, accompanied by reduced total systemic vascular resistance.

PURPOSE

The aim of the study is to screen patients with cirrhosis, which may lead to earlier diagnosing CCM and hyperdynamic syndrome with its consequences among them.

METHODS

The study included 70 patients over 18 years old, with cirrhosis, caused by alcohol, autoimmune, viral other reasons, qualified for liver transplantation. 39 of them were male. Median age was 47. We disqualified patients with a history of cardiovascular diseases. Each patient had a 6-Minute Walking Test (6MWT) done and a hemodynamic monitoring using non-invasive hemodynamic monitor device was also performed.

Basic group characteristic differs between aetiologies of liver diseases. Median NTproBNP level was highest in ALD group (253 pg/ml) and viral group (177.5 pg/ul) compared to autoimmune group (51 pg/ul) and other (114 pg/ml). Median QTc interval was more prolonged in patients with viral aetiology (456 ms) and ALD aetiology (441 ms) than autoimmune aetiology (422 ms) and other aetiology (431 ms). Highest median CO were observed in viral group (6 L/min) and ALD group (5.7 L/min) and lower in autoimmune group (5.35 L/min) and other (5.2 L/min). Median SVRI was lowest in viral aetiology (1700 dyn- s/cm-5/m^2) and ALD aetiology (1888dyn- s/cm-5 /m^2) and higher in autoimmune aetiology (2067dyn- s/cm-5/m^2) and other aetiology (2432dyn-s/cm-5/m^2). There was no statistical difference in distance median value between aetiological groups (407 m in ALD patients' group, 412.5 m in autoimmune patients' group, 384 m in viral patients' group and 400 m for other aetiology patients' group; p=NS). The haemodynamic parameters (CO, SV, SVRI) were not correlated with MELD score and Child Pugh score (p=NS). DBP was positively correlated with MELD score (r= -0.25; p=0,009) and Child-Pugh score (r= -0.31; p=0.003). The distance was negatively correlated with severity of the liver disease based on MELD score (r=-0.34; p=0.0048) score and Child-Pugh score (r= -0.321; p=0,0072). Preliminary results show statistically significant correlations between distance in 6MWT and eGFR (r=0.78; p=0,0082), Systemic Vascular Resistance (SVR) at the end of 6MWT (r=0.197 ;p=0.0011), Diastolic Blood Pressure (DBP) at the end of 6MWT (r=0.45;p=0.014) and NT-proBNP (r=0.28; p=0.0008) level, patient's weight (r=0.286; p=0.044) and height (r=0.37; p=0.008).

CONCLUSION

Preliminary results show that we can detect subclinical alterations in patients' circulatory parameters by non-invasive haemodynamic monitoring. In our study patients with viral and ALD etiology presented more advanced liver cirrhosis stages and more pronounced manifestations of hyperdynamic syndrome which may later progress to CCM. Positive correlation of liver cirrhosis stage and NTproBNP, QTc and 6MWT distance may suggest heart function impairment in course of liver disease.

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