Role of hypersplenism and transjugular intrahepatic portosystemic shunt implantation on cytopenia in decompensated liver cirrhosis

Info

PUBLISHED DATE
2024-01-01

JOURNAL
Zeitschrift für Gastroenterologie

LINK
https://doi.org/10.1055/s-0043-1777520

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Abstract

Cytopenia in patients with cirrhosis is a common but incompletely understood complication. It has been discussed that portal hypertensive hypersplenism is causative, while the results of studies investigating the effect of reducing hypersplenism have been conflicting. However, the fact that substitution of thrombopoietin analogues improved thrombocytopenia suggests that the observed reduction of thrombopoietin in cirrhotic patients plays a crucial role.

The aim of the present study was to investigate the effects of reducing portal hypertension by implanting a transjugular intrahepatic portosystemic shunt (TIPS) on haematopoiesis and to further clarify the role of hypersplenism in cytopenia.

In 70 patients, haematological parameters were analysed before and after the TIPS procedure and correlated with liver synthesis parameters and functional parameters like spleen size and splenic elastography. Moreover, the number of blood cells in blood drawn from portal vein, splenic vein and inferior vena cava during the procedure was analysed.

The analysis of cell count in portal and splenic vein suggest that hypersplenism does not appear to play a major role in thrombocytopenia, but does play a role in anaemia. The latter improves as does thrombocytopenia after TIPS implantation, although stent-related haemolysis is already observed during the procedure and can also be assessed in the longer term. Whether TIPS implantation and recompensation also affect haematopoiesis, as measured by thrombopoietin and erythropoietin, is currently being investigated.

In conclusion, these data show that TIPS has a beneficial effect on cytopenia as a side effect and that hypersplenism is only potentially relevant in the context of anaemia.