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TRYPTOPHAN METABOLISM IN CIRRHOTIC PATIENTS WITH AND WITHOUT MANIFESTATIONS OF OVERT HEPATIC ENCEPAHLOPATHY

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Introduction Patients with hepatic encephalopathy have an altered sleep pattern. Tryptophan metabolism produces two sedative compounds oxindole and melatonin. Altered tryptophan metabolism in patients with hepatic encephalopathy could have some role in the pathogenesis of the disease.

Aim The study aim was to study differences in the concentrations of oxindole and melatonin between various parts of the body in cirrhotics with and without hepatic encephalopathy.

Methods During a check for patency on a previously constructed transjugular intrahepatic portosystemic stent shunt (TIPSS) blood was collected from the splenic, portal, hepatic and internal jugular veins and right atrium in 10 cirrhotic patients without evidence of overt hepatic encephalopathy and 10 patients with Hepatic encephalopathy grade A or B. ^{1}H Nuclear Magnetic Resonance Spectroscopy was used to measure concentrations of oxindole and melatonin in plasma.

Results In cirrhotic patients oxindole levels were significantly higher in portal vein than hepatic vein (408±63 vs 280±58 μmol/dl ($p<0.05$)) and also significantly lower in the right atrium compared to the internal jugular vein (377±42 vs 521±73 μmol/dl ($p<0.03$)). In encephalopathic patients oxindole levels were significantly lower in the right atrium compared to the internal jugular vein (389±61 vs 768±77 μmol/dl ($p<0.01$)). Levels in the internal jugular vein in encephalopathics were significantly higher than cirrhotics (521±73 vs 768±77 μmol/dl ($p<0.043$))2. Melatonin levels in cirrhotics were significantly higher in the right atrium compared to the internal jugular vein (603±54 vs 288±39 μmol/dl ($p<0.01$)). In encephalopathic patients melatonin levels were also significantly higher in the right atrium compared to the internal jugular vein (889±80 vs 533±57 μmol/dl ($p<0.03$)). Levels in portal vein and hepatic vein in encephalopathics were significantly higher than cirrhotics (1251±73 vs 772±77 μmol/dl ($p<0.01$)) for portal vein and (1448±102 vs 706±93 μmol/dl ($p<0.007$)) for hepatic vein.

Conclusion All metabolites had significant hepatic extraction both in cirrhotics and encephalopathics. Melatonin had brain clearance in encephalopathy while oxindole clearance was lower in encephalopathy.

Competing interests None.

Keywords cirrhosis, hepatic encephalopathy, tryptophan.