Plasma endothelin level in liver diseases its role in portal hypertesion and hepatorenal syndrome

Mabrouk Hassan Ibrahim

Our study included 75 patients with chronic liver diseases dividedinto 3 groups: the first group included 25 patients with B hepatic fibrosis,portal hypertension, esophageal varices either bleed or not, with normalrenal function or with HRS. The second group included 25 patients withpostviral cirrhosis with or without portal hypertension, bleeding or non _bleeding esophageal varices, with normal renal function or with HRS.They may have hepatitis B virus or hepatitis C virus or both.The third group included 25 patients with mixed B hepatic fibrosisand post viral cirrhosis, with bleeding esophageal varices or non _bleeders, with normal renal function or with HRS.There were also 10 healthy individuals acting as a control group.We excluded patients with diabetes mellitus, hypertension, heartfailure, bronchial asthma or other diseases that may influence the plasmaendothelin concentration.For all patients groups and also the control group we evaluated theliver status by many laboratory tests and investigational procedures:complete blood picture, liver function tests (S. bilirubin, S. albumin, PT,PC, ALT, AST, total protein), viral hepatitis markers for HBV and HCV,renal function tests (S. creatinine and blood urea), random blood sugar.Also abdominal sonars were done to all patients and control groups.Upper endoscopy was done for all patients groups. Proctosigmoidoscopywas done for all patients with B hepatic fibrosis and mixed cirrhosis andB agglutination antibodies were also done. Liver biopsy was done for 7cases in whom the diagnosis was not established..~ieRw with HRS· underwent many a:’aiJiiional laboratoryinvestigations to establish their diagnosis such as urine and plasmasodium concentration and urine volume and urine analysis to exclude anyother cause of renal failure.Finally plasma endothelin radioimmunoassay was done for allpatients and control groups.Endothelin is the most potent endogenous vasoconstrictor yetidentified. It is a 21 - aminoacid peptide secreted by the vascularendothelial cells as well as many tissues such as kidneys, lungs, brain,adrenals, reproductive system, heart and others.Its actions are through’ modulation of vasomotor tone, cellproliferation, and hormone production.Many investigations showed that endothelin has a role in thephysiology and also in disease processes in many vital organs and that theplasma and urine concentrations are changed significantly in manydisease entities and this may be used as a disease markers or it can beused in the follow-up for these diseases.Our study focussed on the role of endothelin in the pathogenesis ofthe portal hypertension and the hepato-renal syndrome and showed thatplasma endothelin is

significantly increased in all patients groupswhatever the etiologies of these patients - compared to healthy controls.So the cause of portal hypertension; hepatic fibrosis, post viral cirrhosis,or mixed cirrhosis may have no direct influence on the plasma endothelinconcentrations.The plasma endothelin concentration is significantly increased inpatients with bleeding esophageal varices than those with non -bleedingesophageal varices.Also, there is a significant positive correlation between plasmaendothelin concentrations and portal vein diameters. So, endothelin maybe accused in the causation of portal hypertension and its perpetuations.Plasma endothelin concentration is highest in patients with thehepatorenal syndrome compared with cirrhotic patients with normal renalfunction and control subjects. So, the kidney vasculature is the most•sensitive tissue to the vasoconstrictor effect of endothelin.Plasma endothelin levels in HRS' are about 10 times than thenormal control subjects whereas cirrhotic patients with normal renalfunction are only about 3-4 folds than the control subjects.Also plasma endothelin levels are significantly correlated withblood urea and serum creatinine and so this enforces its role in thepathogenesis of the hepatorenal syndrome.Many investigators studied endothelin in chronic liver diseases andhepatorenal syndrome and showed increased, within normal or decreasedlevels of endothelin in these situations and this can be attributed to thedifferences in selections of patients, etiologies of cirrhosis, or thetechniques used for the estimation of plasma endothelin levels.Plasma endothelin concentrations have significant correlations withPT, PC, S. bilirubin and S. albumin concentrations so, it may have a rolein the bleeding diathesis in these patients....{n,·-eonclusion,although the plasma endothelin concentration ISincreased in patients with porta,l hypertension and hepatorenal syndrome,urinary endothelin concentrations must be determined and also comparedwith the corresponding plasma endothelin levels to show if that increasein plasma endothelin level is due to the increased production by thekidney vasculature or impaired excretion of these peptides.,., ,., ",' -~- ,Also continued work must be done on the endothelin receptorantagonistsand this may be beneficial in the control of portalhypertension and hepatorenal syndrome.Lastly, as plasma endothelin measurements have been found tocorrelate welI with the severity of portal hypertension and hepatorenalsyndrome, this may have prognostic or diagnostic values and may be usedas a marker for the progression of these diseases.