Summary

The objective of the present work was to study the utility of serum procalcitonin for rapid and early diagnosis of bacterial infection in chronic liver diseases and to compare between serum PCT and other inflammatory markers as CRP, ESR, total leucocytic count and relative segmented neutrophils.

For this purpose, all patients were subjected to the following:

- **Thorough history taking and complete physical examination.**
- **Full general and local examination.**
- **Full investigations including:**

1- Complete blood picture and ESR in 1st hour**.**

2- CRP (qualitative and semiquantitative determination of C-reactive protein by agglutination to latex) (**Lars-Olof et al., 1997)**

3- Renal function test: serum creatinine.

4- Liver function tests:

- Serum alanine transaminase (ALT).
- Serum aspartate transaminase (AST).
- Serum bilirubin (Total and direct).
- Serum total protein.
- Serum albumin .
- Prothrombin time.

5- Abdominal ultrasonography:

Ultrasonographic evaluation included:

- Evaluation of liver size, ecehopattern and portal vein (diameter and patency).
- Evaluation of spleen (size, echopattern and focal lesions).

- Evaluation of ascites (amount: minimal, moderate or marked ascites, and evidence of adhesions).
- Presence of intra-abdominal circumscribed fluid collections.
- Gall bladder (wall thickness, presence of mud, stones or masses).
- Kidney (site, size, ecchopattern, back pressure changes and presence of stones).

6-Diagnostic abdominal paracentesis:

It was done for: Patients who develop signs or symptoms of SBP during hospitalization i.e. fever, abdominal pain or change in gastrointestinal motility (vomiting, diarrhea or ileus).

10 ml of the ascitic fluid were aspirated from each patient and they were divided as the following:

(I) 5 ml for physical examination for:

a- Colour.

b- Turbidity.

(II) 5ml of ascitic fluid used for WBCs (total and polymoprhonuclear) counting:

SBP was diagnosed when (PMN) count in ascitic fluid $\geq$ 250 / mm^3 in the absence of data compatible with secondary peritonitis (i.e gastro intestinal perforation).

7-The B.R.A.H.M.S PCT-Q is an immunochromatografic test for the semi-quantitative detection of PCT (procalcitonin), which is used for diagnosing and controlling the treatment of sever bacterial infection and sepsis. **(Mullier, et al., 2000)**

Causes of chronic liver diseases: total number (20)

6 cases had chronic liver diseases due to HCV diagnosed by (PCR and positive Anti-HCV Ab), one case HBV diagnosed by (HBV markers), 3 cases due to galactosemia diagnosed by (galactose-1-phosphate uridyl transferase deficiency and liver biopsy), 3 cases due to Glycogen Storage diseases diagnosed by (glucose-6-phosphatase deficiency, liver biopsy and genetic studying), 3 cases due to biliary tract obstruction diagnosed by liver biopsy, one case due to Gaucher disease diagnosed by (Gaucher cells in bone marrow examination and liver biopsy), one case due to α1-antitrypsin deficiency diagnosed by (deficiency of serum α1-antitrypsin and liver biopsy), one case due to Niemann pick disease diagnosed by (liver biopsy) and one case of liver cirrhosis due to unknown etiology.

Causes of bacterial infection in chronic liver diseases:

10 cases had Spontaneous bacterial peritonitis (SBP) who had diagnosed by ascitic fluid PMN count > 250 c/mm^3, lobar pneumonia (3 cases) diagnosed by X rays and clinically, typhoid fever (2 cases) diagnosed by widal test >1/320, pnemcoccal meningitis (2 cases) diagnosed by CSF examination and culture, perforated appendicitis (1 case), perforated peptic ulcer (1 case), cellulites (1 case).

Fever, abdominal pain, jaundice, bleeding tendency and vomiting were the main clinical presentation in chronic liver diseases with bacterial infection (70%, 65%, 60%, 40% and 40% respectively).

Although there was a significant difference between control and patients group regarding temperature, BP, RR and pulse but we found lack of sensitivity of vital signs to detect bacterial infection in chronic liver diseases(sensitivity was 70%, 65%, 70%, 70% respectively).

Patients with chronic liver diseases and bacterial infection had significantly higher ALT, AST, total serum bilirubin, direct serum bilirubin, prothrombin time and serum creatinine but significantly reduced total serum proteins and serum albumin levels than control group.

Patients with chronic liver diseases and bacterial infection had significantly high levels of serum PCT, serum CRP, ESR, total W.B.Cs and relative segmented leucocytic count in peripheral blood. Sensitivity of PCT, CRP, ESR, total W.B.Cs and segmented leukocyte were (90%, 80% 75%, 60% and 70% respectively). Therefore, PCT is more sensitive than CRP, ESR, total W.B.Cs and relative segmented leukocytic in peripheral blood for diagnosis bacterial infection in chronic liver diseases.

We found no correlation coefficient between PCT and (Age, Wt, Temp, RBCs, WBCs, segmented neutrophiles, ALT, AST, total serum Bilirubin, Direct serum bilirubin, serum Protein, serum Albumin, prothrombin time and serum creatinine) among patients. But we found significant positive correlation coefficient between PCT and ESR .we also found insignificant correlation coefficient between PCT and CRP.

In chronic liver diseases with bacterial infection, 35% of patients were Child pugh class B and 65% were Child pugh class C. PCT and ESR were higher in Child Pugh class B while CRP was higher in Child Pugh class C but There was no significant difference between Child pugh class B and Child pugh class C regarding PCT, CRP and ESR.

10 patients had Spontaneous bacterial peritonitis (SBP). Most of them commonly presented by Fever (70%), abdominal pain (70%),

jaundice (70), bleeding tendency (40%), diarrhea (30%) and Vomiting (50%).

Clinical examination of Spontaneous bacterial peritonitis (SBP) revealed that palmar erythema (60%), superficial tenderness (50%), Rebound tenderness (50%), dilated abdominal veins (30%), splenomegaly (80%) and tense ascites (50%).

Ultrasnographic findings in Spontaneous bacterial peritonitis had shrunken liver 50% and had enlarged liver 50%. Splenomegaly was found in 80% of patients. The amount of ascites detected ranged from moderate 50%, to massive 50%.

There was a statistical significant difference between groups as regard ALT, AST, Total serum proteins, serum albumin, Serum bilirubin (total and direct), prothrombin time and serum creatinine.

Complete blood count of the Spontaneous bacterial peritonitis (SBP) and control. There is significant difference in hemoglobin, platelets and relative segmented leucocytes. White blood cell numbers were higher in SBP than control group but the difference was not significant but there was significant difference in relative segmented leucocytes. we found that 5/10 patients had elevated WBCs count and 6/10 had elevated relative segmented leucocytes in peripheral blood samples, so WBCs count and relative segmented leucocytes were not sensitive to detect spontaneous bacterial peritonitis. Sensitivity of WBCs and segmented leukocyte in blood samples were 50%, 60% respectively. In addition, we found increased in total leucocytic count (1621.3 ± 1375.6) and polymoprhonuclear count (1341.1 ± 1173.7) (before treatment) in ascitic fluid of 10 cases of spontaneous bacterial peritonitis. Therefore, total WBCs and segmented leucocytic count in ascitic fluid were better than

total WBCs and relative segmented leucocytic count in blood to diagnose spontaneous bacterial peritonitis. Also, we found a statistical significant difference between spontaneous bacterial peritonitis group and control group as regard serum PCT, serum CRP and ESR. Sensitivity of PCT, CRP and ESR was 90%, 80 %and 70%. Therefore, PCT is more sensitive than CRP and ESR in diagnosis of spontaneous bacterial peritonitis.