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Vascular Endothelial Growth Factor And Soluble Adhesion Molecules As A Diagnostic Markers For Spontaneous Bacterial Peritonitis In Cirrhotic Liver Disease

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Abstract:

Spontaneous bacterial peritonitis (SBP) is a frequent and severe complication in cirrhotic patients with ascites that usually results in renal failure and death despite the efficacy of the current antibiotic therapy.

The aim of this study was determine serum and ascitic fluid of soluble-L selectin (s-L Selectin), intracellular adhesion molecule-1 (ICAM-1), Vascular cell adhesion molecule-1 (VCAM-1) and vascular endothelial growth factor (VEGF) in cirrhotic patients, and to search for a relationship between them and SBP.

This study was performed on 30 cirrhotic patients with SBP. Their ages ranged (from 38-55 years) with mean of (32 $\pm$ 5.5), 30 cirrhotic patients with non-infected ascites; their ages ranged (from 30-52 years) with mean of (35 $\pm$ 6.5). This group considered as cirrhotic control group and 20 healthy control subjects their ages ranged (from 28-55 years) with mean of (30 $\pm$ 7.5).

Serum and ascitic fluid of adhesion molecules as well as VEGF levels were significantly higher in cirrhotic patients with SBP as well as cirrhotic patients with non-infected ascites as compared to healthy control group.

There were significant increase in serum and ascitic fluid level of leukocyte, PMN and ICAM-1 in SBP as compared to cirrhotic with non-infected ascites. There was non-significant decrease in serum and AF level of VEGF in cirrhotic control group as compared to SBP group.

The ascitic fluid PMN and s-L Selectin were higher in culture positive SBP patients particularly in those with gram positive isolates, where these are non-significant increase in serum and ascitic fluid level of VEGF in culture positive SBP than culture negative cases.

Positive correlation was found between serum and ascitic fluid level of ICAM-1 in SBP and non-infected cirrhotic group. Also, positive correlation was found between VEGF levels in serum ascetic fluid levels in both cirrhotic groups (SBP and non-infected cirrhotic group).

These data suggest that: Significant elevated level of VEGF in both SBP and non infected cirrhotic patient may have pathophsiological consequences of local regulation of vascular tone and endothelial permeability, significant elevated level of adhesion molecules in both SBP and non-infected cirrhotic patients are due to inflammatory response and endothelial cell activation. Serum and ascetic fluid of ICAM-1 can be used as useful marker for diagnosis of SBP and for monitoring the treatment of cirrhotic patients.

Introduction:

Spontaneous bacterial peritonitis (SBP) is common complication in patients with liver cirrhosis and ascites and is associated with a high mortality rate despite the efficacy of the current antibiotic therapy (Jansen, 1997).

The prevalence of SBP in unselected cirrhotic patients admitted to a hospital ranges between 20% and 30% and it is associated with a 30%-50% mortality rate (Hillebrand, 2002).

Selgas *et al.* (1996), reported that

there are two pathogenic mechanism of SBP, bacteremia secondary to depressed lymph nodes and depressed reticuloendothelial phagocytic and ascetic fluid bacterial activities, and translocation of bacteria from the gut to the mesenteric lymph nodes.

Infection causes the release of multiple endogenous mediator, that are responsible for the inflammatory response. Although the aim of this response is to eliminate the infection, it may be associated with adverse hemodynamic and metabolic consequence (Navasa ***et al.,*** 1998).

Cytokines are probably the most important mediators of sepsis. After antigenic stimulus, monocytes and macrophages will synthesize cytokines. Such as TNF-α implicated in the expression of adhesion molecules on endothelium and in the systemic response to infection ***(Carlos and Harlan, 1994)***.

Neutrophils migrate by a multistage process which involves an initial loose attachment stage followed by firm adhesion ***(***Luster**,** 1998).

The selectin family of adhesion molecules and their respective ligands are important in the early transient adhesion phase. The selectin family is composed of three distinct carbohydrate receptors expressed by either endothelial cells (E-Selectin, CD62E), leukocytes (L-Selectin, DC61L) or platelets and endothelial cells (P-Selectin, CD 62P) (Bevilacqua, 1993).
By definition, adhesion molecules are membrane structures that play a role in cell migration and homo- and heterotypic intercellular adhesion (Pigott *et al*., 1992). It has been pointed out that the appearance of adhesion molecules at the surface of endothelial cells, that occupy a unique crucial position at the interface between blood and tissues, is a consequence of cytokine-induced activation of these cells. The function of these molecules is to mediate the attachment or adherence of certain leukocyte, thus the potential significance of adhesion molecules in controlling the extravasation of leukocytes out of the circulation at times of acute and chronic inflammation (Bevilacqua, 1993).

Intracellular adhesion molecule-1 (ICAM-1, CD54) and vascular cell adhesion molecules-1 (VCAM-1, CD106) are two representative molecules of immunoglobulin gene superfamily proteins, present on activated endothelial cells (Elices *et al*., 1990).

Soluble-E Selectin, (s-E Selectin), soluble (ICAM-1) and soluble (VCAM-1) are detectable in serum under physiological conditions and has been reported to play a role in inflammatory disorders ***(***Shijubo ***et al.,*** 1992 and Pizzolo ***et al., 1994)***.

Vascular endothelial growth factor (VEGF) is a powerful mediator of vascular permeability, which was originally named vascular permeability factor because of its ability to induce vascular leakage ***(***Bates ***et al., 1999)***.

Perez-Ruiz ***et al.*** (1999***)***, reported that peritoneal macrophages of cirrhotic patients can be up-regulated to produce large amount of VEGF when cultured in the presence of cytokines and bacterial lipopoly saccarrides (Lps).

The aim of this study was to determine serum and ascetic fluid levels of (s-L Selectin), (ICAM-1), (VCAM-1) and VEGF in cirrhotic patients and to evaluate its possible impact on the outcome of infection in cases of spontaneous bacterial peritonitis (SBP).

Patients & Methods:

Patients included in this study were divided into three groups:

Group I : 30 patients had liver cirrhosis with spontaneous bacterial peritonitis (SBP). Their ages ranged (38-55) years. There were 18 males and 12 females. The diagnosis of SBP in our cirrhotic group (group 1) was based on presence of symptoms and sign of SBP as, abdominal pain, rebound tenderness, fever, leukocytosis, alteration of gastrointestinal motility, hepatic encephalopathy, or rapid impairment in renal function without any precipitating factor. The diagnosis of SBP in our cirrhotic cases was based on the presence of a PMN count in ascitic fluid > 250 cells/mm^3, in the absence of clinical, radiological or laboratory data suggesting

secondary peritonitis, or other abdominal disorders resembling SBP (e.g., pancreatitis, hemorrhagic ascitis or mycobacterial peritonitis).

Group II: This group comprise 30 patients, 15 females and 15 males. Their ages ranged from (30-52) years. This group considered as cirrhotic control group and were selected from those attending the outpatient clinic for ascites complicating liver cirrhosis. A PMN count in ascitic fluid < 250 cells/mm^3 and the absence of clinical, radiological or laboratory signs of infection.

Group III (Healthy Control Group): This Group comprise 20 normal healthy subjects 10 females and 10 males. Their ages ranged from (28-55) years. This group were selected from hospital workers. The absence of evidence of infection was confirmed by clinical examination and laboratory tests.

All cases and controls were submitted to the following :

1. Complete history taking and thorough clinical examination.
2. Complete urine and stool analysis.
3. Abdominal ultrasonography.
4. **Laboratory investigation**: from each subject 10 mL blood were collected, blood was divided as follows:

a) 2.0 mL were collected into tube containing 0.2 mL dipotassium EDTA, used for complete blood count by untomated blood counter, and differential leukocytic count was done for each subjects.

b) 1.8 mL was put into citrate tube containing 0.2 trisodium citrate dehydrate 3.2% and plasma was then obtained by centrifugation and used for prothrombin measurement using (Thrombal S kit Behring).

c) Six mL were collected into plain tube, allowed to clot and serum was divided into several aliquots for:

Routine chemistry tests: kidney function tests (serum creatinine and urea), liver function tests (AST, ALT, TBil, ALP, serum albumin) were determined using (fully automated chemistry analyser "Hitachi 911").

Hepatitis marker HBsAg, HcvAb (3^{rd} generation ELISA).

Antibilharzial antibody by ELISA.

d) Specific Immunologic tests:

1) Serum and ascitic fluid concentrations of s-L selectin, ICAM-1, and VCAM-1 were assayed with quantitative sandwich ELISA Kit (R & D systems, Abingdon, UK). A monoclonal antibody specific for the antigen has been coated into the wells, Samples, including standards of known concentrations, control specimens and unknowns are pipetted into these wells. During the first incubation, the antigen and a biotinylated monoclonal antibody specific for it are simultaneously incubated. After washing, the enzyme (streptavidin-peroxidase) is added. After incubation and washing, a substrate solution (TMB) which is acting on the bound enzyme is added to induce a coloured reaction product the intensity of which is directly proportional to the concentration of the antigen present in the samples.

2) **Serum VEGF:** VEGF was measured by Accucyte® Human VEGF produced by CYTIMMUNE SCIENCES Inc. ACCUCYTE® Human VEGF is a competitive enzyme immunoassay, with this system goat antirabbit antibodies are used to capture a specific VEGF complex in each sample consisting of VEGF antibody, biotinylated VEGF conjugate (competitive ligand) and sample or standard compete for VEGF specific antibody binding sites. Therefore, as the concentration of VEGF in the sample increase, the amount of biotinylated VEGF captured by the antibody decreases. The assay is visualized using a streptavidin alkalin phosphatase conjugate and an ensuring chromagenic substrate reaction. The amount of VEGF detected is compared to a VEGF standard curve which demonstrates an inverse relationship between

optical density and the VEGF concentration.

5. Paracentesis was done for group I and II: paracentesis were performed in hospital admission in all cirrhotic patients with ascites to investigate the presence of SBP, as recommended by Rimola *et al.*, (2000). A scitic fluid was collected under sterile conditions and seeded in aerobic and anaerobic blood culture bottles at bedside with a minimum of 10 mL inoculated in each bottle (Runyon, 1988).

Total leukocytic count, differential count, gram and ziehl neelsen smear were also done (Cheesbrough, 2000).

A PMN count of more than 250/mm^3 is highly suspicious of SBP and constitutes an indication of antibiotic treatment. Because many cases of SBP are culture-negative (culture negative neutrocytic ascites, ("CNNA"), the isolation of the responsible organism was not considered essential for the diagnosis of SBP. An ascitic fluid PMN count of less than 250/mm^3 excludes the diagnosis of SBP ***(Rimola et al., 2000)***.

Statistical Analysis:

All results were analysed using the SPSS statistical package. Analysis of variance (ANOVA) test was used to compare different quantitative values between different groups. P value was significant when ($P < 0.05$). Pearson correlation was used to correlate different quantitative variables.

Results:

Patients suspect of SBP included in this study were 18 males (60%) and 12 females (40%). Their ages ranged from (38-55) years with a mean of (32 $\pm$ 5.5). Cirrhotic control group (group II) included in this study were 15 males (50%) and 15 females (50%), their ages ranged from (30-52) years with a mean of (35 $\pm$ 6.5). Group III (healthy control group) comprise of 10 males (50%) and 10 females (50%), their ages ranged from (28-55) years with mean of (30 $\pm$ 7.5). Baseline clinical and laboratory characteristic of the studied groups provided in Table (1). There was marked hepatic failure in group I and II as indicated by low serum albumin, high serum bilirubin and low prothrombin activity.

Table (2) shows that serum levels of the studied adhesion molecules were significantly increased in cirrhotic patients, either infected or non-infected compared with healthy control group. Group I associated with significantly elevated total leukocytic count, elevated PMN, elevated serum level of ICAM-1 and non-significant elevated serum VEGF as compared with non-infected cirrhotic group (group II).

Table (3) shows the comparison of ascitic fluid levels of the studied parameters between the cirrhotic with SBP (group I) and cirrhotic without SBP (group II) where there are statistically increase between the two groups regarding ascitic fluid levels of leukocyte, PMN, ICAM-1 and non-significant decrease in AF level of VEGF in cirrhotic control group as compared to SBP group.

Table (4) shows the comparison between culture positive and culture negative cases in patients suffering from SBP. Where there is a statistically significant increase in AF PMN and serum s-L selectin in culture positive SBP than culture negative group, where there are non-significant increase in serum and ascitic fluid of VEGF in culture positive SBP than culture negative cases.

Table (5) shows positive correlation was found between VEGF in serum and ascitic fluid in group I and group II. Positive correlation was found between serum and ascitic fluid level of ICAM-1 in group I and group II. No correlation was detected between serum or ascitic fluid levels of the rest of the studied adhesion molecules.

Table (1): Baseline clinical and laboratory characteristics the studied groups.

Parameter	Group I (SBP Cirrhotic Group) (n = 30)	Group II (Cirrhotic Control Group) (n = 30)	Group III (Healthy Control Group) (n = 20)
Age (years)	32 ± 5.5	35 ± 6.5	30 ± 7.5
Gender (male/female)	18/12	15/15	10/10
Heart rate (b/m)	90 ± 8	85 ± 7	84 ± 6
Temperature (°C)	37.5 ± 0.3	37 ± 0.4	37.1 ± 0.2
Serum albumin (gm/dL)	2.7 ± 0.5	2.8 ± 0.5	4 ± 0.5
Serum bilirubin (mg/dL)	3.9 ± 0.4	2.9 ± 0.7	0.8 ± 0.2
Serum creatinine (mg/dL)	1.5 ± 0.8	1.3 ± 0.4	0.8 ± 0.4
BUN (mg/dL)	38.5 ± 18	30 ± 11	20 ± 3
Prothrombin activity (%)	60 ± 24	65 ± 18	96 ± 4.5
HBV (+ve/-ve)	6/24	5/25	---
HCV (+ve/-ve)	16/14	20/10	---
Antibilharizal Ab (+ve/-ve)	15/15	14/16	---

Table (2): Comparison of mean levels of blood total leukocytic count, blood PMN, serum s-L selectin, ICAM-1, VCAM-1 and VEGF in different studied groups.

Parameters	Group I (SBP) n = 30 (mean ± SD)	Group II (Cirrhotic Control Group) n = 30 (mean ± SD)	Group III (Healthy Control Group) (mean ± SD)	Group I vs Group III (P value)	Group II vs Group III (P value)	Group I vs Group II (P value)
Total elukocytic count/mm^3	9450 ± 5780	5615 ± 1850	6540 ± 845	< 0.05	> 0.05 NS	< 0.05
Blood PMN/mm^3	7500 ± 6950	3940 ± 1700	4250 ± 830	<0.05	> 0.05 NS	< 0.05
Serum s-L selectin (ng/mL)	2630 ± 515	2580 ± 618	750 ± 180	< 0.001	< 0.001	> 0.05
Serum ICAM-1 (ng/mL)	1840 ± 716	985 ± 588	380 ± 150	<0.001	< 0.05	< 0.05
Serum VCAM-1 (ng/mL)	1511 ± 176	1380 ± 240	408 ± 170	< 0.05	< 0.05	> 0.05
Serum VEGF (pg/mL)	189.5 ± 35.8	154 ± 1.1	62 ± 2.9	< 0.05	< 0.05	> 0.05

Table (3): Comparison of mean levels of ascitic fluid leukocyte, ascitis fluid PMN, concentrations of studied adhesion molecules, VEGF in AF in the SBP group as compared to cirrhotic control group.

Parameter	Group I (SBP) n = 30 mean ± SD	Group II (cirrhotic control group) n = 30 mean ± SD	P value
AF leukocyte/mm^3	2250 ± 480	88 ± 40	< 0.001
AF PMN/mm^3	2040 ± 390	35 ± 28.5	< 0.001
AF S-L Selectin (ng/mL)	1050 ± 389.8	958 ± 444	> 0.05
AF ICAM-1 (ng/mL)	1580 ± 576	820 ± 376	< 0.05
AF VCAM-1 (ng/mL)	1238 ± 212	1188 ± 198	> 0.05
AF VEGF (pg/mL)	280 ± 18.9	258 ± 4.8	> 0.05

Table (4): Comparison of mean levels of serum and ascitic fluid concentrations of the studied adhesion molecules, VEGF and polymorphonuclear leukocyte between culture positive and culture negative SBP cases.

Parameter	Culture Positive n = 12 mean ± SD	Culture Negative n = 16 mean ± SD	P value
Blood PMNL/mm^3	7640 ± 5840	6890 ± 6230	> 0.05
AF PMNL/mm^3	2240 ± 1780	1460 ± 1650	< 0.01
Serum S-L Selctin (ng/mL)	2802 ± 570	2230 ± 340	< 0.05
AF S-L Selectin (ng/mL)	1148 ± 430	980 ± 399	> 0.05
Serum ICAM-1 (ng/mL)	1988 ± 660	1690 ± 730	> 0.05
AF ICAM-1 (ng/mL)	1690 ± 630	1428 ± 538	> 0.05
Serum VCAM-1 (ng/mL)	1580 ± 188	1438 ± 166	> 0.05
AF VCAM-1 (ng/mL)	1340 ± 260	1199 ± 214	> 0.05
Serum VEGF (pg/mL	198.5 ± 44	176 ± 39.8	> 0.05
AF VEGF (pg/mL)	292 ± 40.1	236 ± 36.4	> 0.05

Table (5): Relationship between the serum and ascitic fluid adhesion molecules and VEGF in group I and group II.

Correlation between	R	P value
s-L Selectin in ascitic fluid and serum in group I	0.20	> 0.05
s-L Selectin in ascitic fluid and serum in group II	0.19	> 0.05
ICAM-1 in acitic fluid level and serum in group I	0.683	< 0.001
ICAM-1 in acitic fluid level and serum in group II	0.750	< 0.001
VCAM-1 in acitic fluid level and serum in group I	0.24	> 0.05
VCAM-1 in acitic fluid level and serum in group II	0.29	> 0.05
VEGF in acitic fluid level and serum in group I	0.60	< 0.05
VEGF in acitic fluid level and serum in group II	0.54	< 0.05

Discussion

Recent studies have shown that spontaneous bacterial peritonitis (SBP) is more common than previously though among patients admitted to the hospital with cirrhotic ascities ***(***Parsi ***et al., 2004)***.

Spontaneous bacterial peritonitis (SBP) is the most important dangerous infectious complication of cirrhotic patients. The SBP is probably the final step in a series of events including repeated episodes of

bacteremia and ultimately seeding of bacterial into ascitic fluid. AF PMN count of more than 250/mm^3 is highly suspicious of SBP and constitutes an indication to empirically initiate antibiotic treatment ***(***Angeloni ***et al***., 2003***)***.

Although an ascitic fluid PMN count greater than 500/mm^3 is more specific for the diagnosis of SBP, the risk of not treating the few patients with SBP who have an ascitic fluid PMN count between 250 and 500/mm^3 is unacceptable. An ascitic fluid PMN count of less than 250/mm^3 excludes the diagnosis of SBP. Such ***et al.*** (2002) despite the efficacy of the current antibiotic therapy, SBP still results in renal failure and deaths.

Translocation of bacteria from their intestinal origin, alterations in immune defense. Mechanisms and deficiencies in the ascitic fluid antimicrobial activity seem to represent the main steps in the path-ogenesis of SBP in cirrhosis. Among the factors determining the development of bacterial translocation, intestinal bacterial overgrowth (mainly related to decreased intestinal motility) and changes in the intestinal barrier appear to play an important role in pathogenesis of SBP ***(***Sola and Soriano, 2002 and Navasa & Rodes, 2004).

Infections particularly SBP cause the release of multiple endogenous mediators that are responsible for the inflammatory response, which may be associated with adverse hemodynamic and metabolic cons-equences (Billiau and Vande-Kerhhove, 1991).

Inflammatory and immune response in SBP characterized by elevated serum and ascitic fluid levels of proinflammatory cytokines, such as tumour necrosis factor-alpha (TNF-α) or IL-6, even in the absence of SBP (Zeni *et al*., 1993 and Souza *et al*., 2003) .

Proinflammatory cytokines have been implicated in the expression of adhesion molecules on the cell surface (Rodriguez-Ramos *et al*., 2001).

Such *et al*. (2002) reported that increased levels of ascitic fluid and serum proinflammatory cytokines in SBP.

In the present study, there were significant increase in serum and ascitic fluids of s-L selectin, ICAM-1 and VCAM-1 is patients with SBP and in non-infected liver cirrhosis. This results was in agree-ment with that of Pruimboom *et al*. (1995). Patients with SBP showed increased ICAM-1 concentrations in serum and asci-tic fluid compared to cirrhotic control group cases. This finding was in agreement with that of Giron-Gonzalez *et al*., (2001): elevated levels of soluble adhesion molecules as an expression of persistent activation of endothelium and leukocytes, imply a favorable condition for their migration towards the location of inflammation (Donnely *et al*., 1994).

Expression of ICAM-1 and VCAM-1 is differently modulated (Carlos and Harlan, 1994). Thus IL-1 secreted by macr-ophages after multiple stimuli (such as lipo-polysaccharide), selectively increase the expression of ICAM-1 ***(Swerlick et al., 1992)***.

Pizzolo *et al*. (1994) reported that ICAM-1 could be synthesized by leuko-cytes and hepatocytes. The expression of these adhesion molecules favours the migr-ation of leukocyte towards the perit-oneum in the presence of a chemotactic stimulus.

In this study the number of SBP cult-ure positive cases was 40% while culture negative cases was 60%. This result matc-hed the results of Navasa *et al*. (1998). The ascitic fluid concentrations of S-L Selectin were significantly higher in culture positive cases compared to culture negative cases.

Among culture positive cases those with gram positive isolate had the highest ascitic fluid s-L Selectin level and PMN concentration. This results was in agree-ment with that of Giron-Gonzalez *et al*., (2001), but disagreement to the finding of Navasa and associates (1998), who report-ed that the gram negative isolates had the highest ascitic fluid levels of s-L Selectin.

Evans *et al*. (2003) reported that the organisms cultured from ascitic fluid in out-patients are predominantly gram positive.

Our results suggest that in SBP, the interaabdominal inflammatory process seems to depend, to some extent, on the

type and concentration of causative organisms.

The present study show that positive correlation was found between serum and ascitic fluid level of ICAM-1 in SBP group (Group I) and cirrhotic control group. This is consistent with previous report by Pruimboom ***et al.*** (1995).

Vascular endothelial growth factor (VEGF) was originally named vascular permeability factor because of its ability to induce vascular leakage (Bates ***et al.,*** 1999).

Plasma extravation commonly occu-rred in tumour microvasculature is caused by VEGF and that effect of this substance on microvessels is more potent than any other mediator of vessel permeability ***(***Sanger *et al.*, 1993***)***.

Zhao and associates (2003), reported that the pretherapeutic serum VEGF levels in hepatocellular carcinoma (HCC) patients appear to reflect the diseases potential activity of vascular invasion and metastasis.

In this study there is significant increase in serum and AF of VEGF in cirrhotic patients with SBP as well as cirrhotic patients without SBP (group II). This results is agreement with Pilar ***et al.*** (2001), and in disagreement with ***Akiyoshi et al. (***1998***)***, who reported that in liver cirrhosis serum level of VEGF were significantly lower than control.

Pilar ***et al.*** (2001***)*** reported that the enhanced endothelial cell proliferation induced by conditioned medium of macrop-hages isolated from the ascites of patients with SBP is abolished by anti-VEGF antibody.

In this study there is non-significant decrease in serum and AF level of VEGF levels in cirrhotic non-infected group (group II) as compared to SBP group (group I).

Shi ***et al.*** (2002) reported that the protein level of VEGF can reflect, the compensation status of cirrhosis patients and may act as an anti-cirrhotic factor. Makhlouf ***et al.*** (2002) found that significant increase in serum levels of circulating VEGF in patients with liver cirrhosis and they reported a significant correlation between VEGF and degree of hepatic dysfunction.

In our study we found that there is positive correlation between serum and ascitic fluid levels of VEGF in SBP patients and non-infected cirrhotic control group.

In Conclusion:

Inflammatory response associated with cirrhotic liver either infected or not are associated with elevated levels of adhesion molecules which imply a favorable condition for leukocyte migration towards peritoneum. The degree of inflammatory response at the diagnosis may be an important factor in the mechanism of SBP induced renal failure.

Significant elevated level of VEGF in both SBP and non infected cirrhotic patient may have pathophsiological conse-quences of local regulation of vascular tone and endothelial permeability, signif-icant elev-ated level of adhesion molecules in both SBP and non-infected cirrhotic patients are due to inflammatory response and endot-helial cell activation. Serum and ascetic fluid of ICAM-1 can be used as useful marker for diagnosis of SBP and for moni-toring the treatment of cirrhotic patients.

Recommendation:

Further investigation on larger scale are recommended to follow up cases and determination of serial levels of this adhesion molecules in patients with SBP and to determining its relationship to other prognostic markers.

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عامل النمو للغشاء المبطن للأوعية الدموية وجزيئات الإلتصاق المذيبة كعلامة لتشخيص التهاب الصفاق البكتيري التلقائي في مرض التليف الكبدي

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إلتهاب الصفاق البكتيري التلقائي يعد من أهم وأخطر المضاعفات التي تحدث لمرضى التليف الكبدي وغالبا ينتج عن فشل كلوي وزيادة نسبة الوفاة في هؤلاء المرضى على الرغم من توافر المضادات الحيوية القوية.
أجري هذا البحث على ثلاث مجموعات:
المجموعة الأولى: ثلاثون مريضا مصابين بالتهاب الصفاق البكتيري التلقائي.
المجموعة الثانية : ثلاثون مريضاً مصابين بتليف كبدي واستسقاء.
المجموعة الثالثة : عشرون شخصاً لا يعانون من أي أمراض أو أعراض صحية (مجموعة الأصحاء).
وقد تم إجراء الآتي :
التاريخ المرضي وفحص شامل.
تحليل بول وبراز.
موجات فوق صوتية على البطن.
التحاليل الطبية .. وتشمل الآتي :
أ - صورة دم كاملة .
ب - زمن وتركيز البروثرمبين.
جـ - وظائف كلى وكبد.
د - التحاليل الخاصة بالالتهاب الكبدي (ب ، وسي).
هـ - تحاليل خاصة بالأجسام المضادة للبلهارسيا.
التحاليل الخاصة بالبحث .. وهي عبارة عن :
1. دراسة نسبة مصل وماء الاستسقاء لجزيئات الالتصاق المذيبة (الـ - سيلكتين ، إيكام -1 ، فيكام-1).
2. دراسة نسبة مصل وماء الاستسقاء لعامل النمو للغشاء المبطن للأوعية الدموية (ف – إي – ج – ف).

وقد أثبتت النتائج عن وجود زيادة ذات دلالة إحصائية في نسبة مصل وماء الاستسقاء لكل من جزيئات الالتصاق المذيبة (الـ سيلكتين – إيكام-1 - وفيكام-1) وأيضا سجلت الدراسة زيادة ذات دلالة إحصائية في نسبة مصل وماء الاستسقاء لعامل النمو للغشاء

المبطن للأوعية الدموية في مرضى التهاب الصفاق البكتيري التلقائي ومرضى الاستسقاء الغير بكتيري ، عند مقارنتهم بمجموعة الأصحاء.
أثبتت الدراسة أن هناك زيادة ذات دلالة إحصائية في مصل وماء الاستسقاء لجزئ الالتصاق إيكام-1 عند مقارنة مرضى التهاب الصفاق البكتيري مع مرضى التليف الكبدي الذين يعانون من استسقاء غير بكتيري.
أثبتت الدراسة أن هناك زيادة في نسبة (الـ سيلكتين) في مرضى التهاب الصفاق البكتيري الذين لهم نتائج معملية إيجابية الزرع والميكروب بالمقارنة بالأشخاص الذين أعطت المزارع نتائج سلبية لهم.
من واقع هذه الدراسة يتضح لنا أن دراسة عامل النمو للغشاء المبطن للأوعية الدموية في مرضى التليف الكبدي تلعب دوراً فسيولوجياً في تنظيم حركة وصحة الأوعية الدموية وزيادة جزيئات الالتصاق المذيبة في مرضى التليف الكبدي سواء كان مصاحباً بالتهاب صفاق بكتيري تلقائي أو لا . هي نتيجة الالتهابات والنشاط الذي يصاحب خلايا الأوعية الدموية ، ويعتبر "إيكام-1" علامة جيدة في التشخيص المبكر ومتابعة حالات التهاب الصفاق البكتيري التلقائي في مرضى التليف الكبدي.