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Faculty of Medicine
Internal Medicine Department

Significance of Leukocyte Esterase Reagent Strips in Spontaneous Bacterial Peritonitis (SBP) and associated Pleural Effusion in Cirrhotic Patient

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أهمية كاشف اليكوصيت استريز في حالات الالتهاب البكتيري التلقائي في السائل البيريتونى المصحوب بارتشاح بللورى لمرضى تليف الكبد

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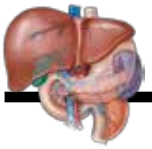
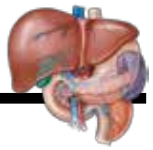


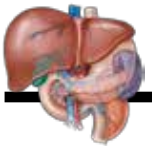
List of Abbreviations

ADH	**:**	**Anti Diuretic H ormone.**
ANP	**:**	**Atrial Natriuretic Peptide.**
APC	**:**	**Antigen Presenting Cells.**
BT	**:**	**Bacterial Translocation.**
CGRP	**:**	**Calcitonin Gene-Related Peptide.**
CNNA	**:**	**Culture-Negative Neutrocytic Ascites.**
CSF	**:**	**CerebroSpinal Fluid.**
CT	**:**	**Computed Tomography.**
CTP	**:**	**Child-Turcotte-Pugh.**
GALT	**:**	**Gut-Associated Lymphoid Tissue.**
GI	**:**	**Gastro-Intestinal.**
HE	**:**	**Hepatic Encephalopathy.**
HRS	**:**	**Hepatorenal Syndrome.**
Ig	**:**	**Immunoglobulins.**
IL-6	**:**	**Interleukin-6.**
LDH	**:**	**Lactate Dehydrogenase.**
LE	**:**	**Leukocyte Esterase.**
LVP	**:**	**Large Volume Paracentesis.**
MELD	**:**	**Model For End-Stage Liver Disease.**

List of Abbreviations



MLN	**:**	**Mesenteric Lymph Nodes.**
MNNB	**:**	**Monomicrobial Non-Neutrocytic Bacterascites.**
MRI	**:**	**Magnetic Resonance Imaging.**
NO	**:**	**Nitric oxide.**
PMN	**:**	**Polymorphonuclear leukocyte count.**
PRR	**:**	**Pattern Recognition Receptor.**
PVS's	**:**	**PeritoneoVenous Shunt.**
RAAS	**:**	**Rennin-Angiotensin-Aldosterone System.**
SAAG	**:**	**Serum – Ascites Albumin Gradient.**
SBEM	**:**	**Spontaneous Bacterial Empyema.**
SBP	**:**	**Spontaneous Bacterial Peritonitis.**
SNS	**:**	**Sympathetic Nervous System.**
TGF-B	**:**	**Transforming Growth Factor-B.**
TIPS	**:**	**Transjugular Intra Hepatic PortoSystemic Shunt.**
TLR	**:**	**Toll Like Receptor.**
US	**:**	**Ultra-Sonography.**



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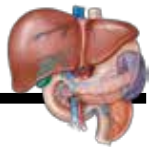

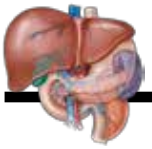

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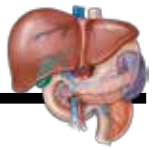

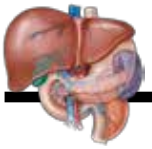

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Introduction

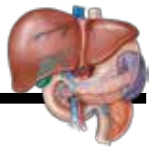
Ascites is a collection of extracellular fluid in the peritoneal cavity resulting from imbalance between inflow and outflow through peritoneal membrane ***(Bataller et al., 1997)***.

Patients with cirrhosis and ascites have a greatly increased total body sodium and water. The main reason for this is a marked retention of sodium and water by the kidney ***(Ring-larson and Herinken, 1986)***.

Besides variceal bleeding, spontaneous bacterial peritonitis (SBP) is another serious complication that can develop in cirrhotic patients ***(Jepsen et al., 2003)***.

Symptoms of SBP include: fevers, chills, nausea, vomiting, abdominal tenderness and general malaise. Patients may complain of abdominal pain and worsening ascites ***(Filik and Unal, 2004)***.

Unfortunately symptoms of SBP are not present in all cirrhotic patients who develop SBP ***(Boixeda et al., 1996)***. In addition many hospitalized cirrhotic patients develop SBP during their non-SBP related admissions especially those with gastrointestinal bleeding ***(Deschenes and Villeneuve, 1999)***. Therefore routine diagnostic paracentesis is the recommended practice for patients with ascites who develop signs or risk factors for SBP ***(Deschenes and Villeneuve, 1999)***. The standard criteria for diagnosis of SBP are ascitic fluid PMN (polymorphoneuclear) cell



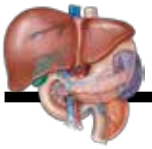
count of > 250 mm^3 and/or a positive ascitic fluid bacterial culture ***(Rimola et al., 2000)***.

Cefotaxime or other third-generation cephlosporins have been considered the first-choice empirical antibiotics in the treatment of cirrhotic patients with SBP and is efficacius in approximately 90% of cases ***(Strauss and Caly, 2006)***. Broad-spectrum quinolones which almost completely absorbed after oral administration and diffuse rabidly through the ascitic fluid are currently used for oral treatment of uncomplicated SBP ***(Strauss and Caly, 2006)***.

Prophylactic oral norfloxacin is extremely useful in preventing SBP in patients that are at high risk for developing SBP such as hospitalized cirrhotic patients with gastrointestinal hemorrhage or low ascitic fluid protein ***(Guarner and Soriano, 1997)***.

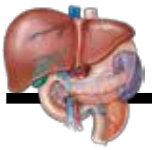
Recently , leukocyte esterase activity testing by dipstick has been used for a rapid diagnosis of infection in many body fluids such as urine, pleural fluid and cerebrospinal fluid ***(Rungsun et al., 2006)***.

The aim of this study is to evaluate the usefulness of dipstick in rapid diagnosis of SBP in cirrhotic patients with pleural effusion.



Aim of the Work

Evaluation of leukocyte esterase reagent strips as a rapid bedside diagnosis of SBP and associated pleural fluid effusion in cirrhotic patient and evaluation of responding to medical treatment .



Liver Cirrhosis

History:

Cirrhosis was first described in the fourth century B.C. hippocratic aphorism: "In case of jaundice, it is a bad sign when the liver becomes hard ***(Chen and Chen, 1984)***. The word "cirrhosis" is a neologism that derives from Greek kirrhos, meaning "tawny" (the orange-yellow colour of the diseased liver). While the clinical entity was known before, it was Rene Leannec who gave it the name "cirrhosis ***(Rogun, 2006).***

Definition :

Cirrhosis is defined anatomically as a diffuse hepatic process characterized by fibrosis and nodule formation. Cirrhosis represents the final common histologic pathway for a wide variety of chronic disease. The progression of liver injury to cirrhosis may occur over weeks to years ***(Sherlock and Dooley, 2002)***.

Pathogenesis of Cirrhosis:

The response of the liver to necrosis are limited ; the most important are collapse of hepatic lobules, formation of diffuse fibrous septa and nodular regrowth of liver cells. Thus, irrespective of the aetiology, the ultimate histological pattern of the liver is the same, or nearly the same ***(Iredule, 2003)***.