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Pathways and causes of cellulitis: Creates acute kidney injury during liver cirrhosis

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Abstract
Bacteria gain entry in to the body of the liver cirrhosis in many ways. They break the skin. There will burns due insect bites, surgical incisions and intravenous (IV) catheters are all potential pathways. Staphyloccucus aurous cellulitis starts from a central localized infection and spreads from there to entire body parts. Many other bacteria also cause cellulitis. Due that there will be immunosuppression and neutropenia in the body. This creats renal insufficiency. The incidence of a more serious infection called methicillin – resistant. Cellulitis is bacterial skin and soft tissue infection which occurs when the physical skin barrier, the immune system is impaired. Diabetes, obesity and old age are associated with defects in all of these areas and as a result are major predisposing factors for cellulitis.

Keywords: cellulitis, liver cirrhosis, staphylococcus, streptococcus, methicillin, acute kidney lnjury, insufficiency, Immunosuppresion, Neutropnia

Introduction
Cellulitis is an infection of the deeper layers of the skin and the underlying tissue. The main symptom of cellulitis is the affected area of skin suddenly touring red, painful swollen and hot. Cellulitis can have a wide range of causes although it is usually caused by a type of bacteria called staphylococcus and streptococcus. Cellulitis is a common infection in cirrhosis, but its impact on acute kidney injury (AKI) and mortality has hardly been studied. The aim of this study was to assess the incidence and predictive factors of acute kidney injury and the mortality associated to cellulitis in patients with cirrhosis. Bacteria gain entry into the body of the liver cirrhosis in many ways. They break the skin.There will burns due insect bites, surgical incisions and intravenous (IV) catheters are all potential pathways. Staphyloccucus aurous cellulitis starts from a central localized infection and spreads from there to entire body parts. Many other bacteria also cause cellulitis. Due that there will be immunosuppression and neutropenia in the body. This creates renal insufficiency. The incidence of a more serious infection called methicillin – resistant.Cellulitis is bacterial skin and soft tissue infection which occurs when the physical skin barrier, the immune system is impaired. Diabetes, obesity and old age are associated with defects in all of these areas and as a result are major predisposing factors for cellulitis.

Materials and Methods
A total number of 350 patients were attended initially to the Department of General Medicine with possible signs and symptoms of cellulitis which usually occur on one side of the body, include Red area of th skin that tends to expand. Swelling, tenderness, pain, warmth. Red spots and blisters. Beside this cellulitis is one of the major infections seen in cirrhosis apart from spontaneous bacterila peritonitis (SBP), urinary and respiratory tract infections. The prevalence of cellultis in cirrhosis is 10 – 14%. The patients were referred to Department of Dermatology for skin examination and the Department of Gastroenterology for early diagnosis of cirrhosis. Department of Microbiology investigated for skin infection and the Department of Pathology investigated heamogram, Biochemical analysis was performed in the Department of Biochemistry (all these departments are attached to Shadan Teaching Hospital (a teaching hospital to Shadan Institute of Medical Sciences). The data was collected included demographic, etiology of cirrhosis, co – morbidity, cirrhosis – related complications, site of cellulitis from the decision of multi – specialty faculties of the clinical and medical college.

Results
Skin Infection
Most of the patients had unilateral or bilateral cellulitis presenting as painful lower limb, upper limb and scrotal edema. The skin was erythematous and inflamed th warmth and tenderness on touch. They had superficial ulcerated lesion and serous fluid ooze from the superfacial lesion. The cellulitis patients were also found suspected arterial and venous thrombosis.

Skin and Blood Discharge Culture
The culture positivity was noted both in affected skin discharge and in the blood. The majority of the culture showed monomicrobial growth and the reminder were poly microbial. The most common organism is the Staphylococcus Aureus and the Streptococcus they followed by Escherichia Coli, Klebsiella and Pseudomonas.

The baseline haematological, biochemical and endoscopic parameters

Three hundred and fifty two patients with end stage liver disease were admitted during the study period. Out of these 26 patients (7.7%) had cellulitis and they constituted the study cohort. Their median age was 55.5 +_ 10.5 years. The majority were men(88%). Apart from cellulitis other complications during admission included refractory ascitis, acute renal dysfunction, spontaneous bacterial peritonitis, hepatic encephalopathy and gastrointestinal bleeding.

Table 1: The baseline haematological, biochemical and endoscopic parameters are shown

Parameters	Patients	Controls
Body mass index(kg/m2)	28.80	20.8-32.5
Haemoglobin(gm/dl)	7.53,	10.5-12.5
Total leucocyte count (cells/m3)	14000	4000-11000
Neutrophils (%)	20%	40-70
Paltelets(cells/m3)	40000	1.5o-4.50
Renal Function Test (RFT)		
Blood Urea(mg/dl)	150	15-40
Serum Ceatinine(mg)	3.8	0.5-1.5
Serum Uric Acid	8.0	3.5-5.0
Serum Electrolytes		
Sodium(Na+)(mEq/L)	128	130-135
Potassium(K+)(mEq/L)	> 5.o	3.5-5.0
Chloride(Cl-)(mEq/L)	92	100-110
Liver Function Test(LFT)		
Total Protien(Grams/dl)	5.2	5.0-7.5
Serum Albumin(Grams/dl)	2.2	3.5-5.0
Total Bilirubin (mg/dl)	10.5	0.2 - 0.8
Direct Blirubin(mg/dl)	5.8	0.1-0.2
SGOT(IU/L) (AST)	285	5-40
SGPT(IU/L) (ALT)	326	5 – 40
ALP(IU/L)	428	80 –
270PT(second)	21	up to 13
APTT(second)	48	up to 34
Oesophageal Varice	Grade 3 – 6 cases	
	Grade 2- 18 cases	
	Grade 1 – 4 cases	
Prior history of endoscopic varical ligation	28 cases	

Discussion

Cellulitis in cirrhosis is being increasingly reported. A nationwide population-based study in showed that cirrhotic patients are at higher risk of cellulitis than non-cirrhotics. Studies from India and across the world have reported the prevalence to vary between 8.4 and 28%. In the present series, we found that 8.4% of our admitted patients had cellulitis with cirrhosis.

Conclusion

Prevalence of cellulitis in hospitalised cirrhotic patients at hospital was 8.4%. Almost 50% of infections were due to a monomicrobial infection and three fifths of the isolates were multidrug resistant. Appropriate institution of antibiotics resulted in a favourable outcome, with one death.

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