



## Original Article

## Septicemia Due to Bed Sores in Patients Admitted at Mayo Hospital Lahore

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## ABSTRACT

In Pakistan infections, including septicemia and pneumonia, are the leading causes of hospital mortality, followed by malignancy and cardiovascular causes. **Objectives:** To find the frequency of septicemia in patients due to bed sores in Mayo Hospital Lahore. **Methods:** A cross-sectional research was carried out, and 101 septicemia-diagnosed patients from Mayo Hospital Lahore's different wards were included. The septicemia caused by bed ulcers was assessed. Hematological profile of patients were assessed. **Results:** Septicemia due to bed sores was seen in 18 patients out of which 9 were males and 9 were females. Bilirubin was low in males and females. Blood glucose was high in 6/9 males and normal in 5/9 females. Blood urea was high in majority of males and females. **Conclusions:** Septicemia due to bed sores was seen in patients. WBC, ALP and blood urea was high due to septicemia cause by bed sores. Platelets, ALT and AST were normal

## INTRODUCTION

Extended spectrum beta-lactamase (ESBL)-producing *Escherichia coli* is an important cause of nosocomial infection and is related to higher mortality risk due to septicemia [1]. The most common organisms causing early-onset non-nosocomial infection (NNC) sepsis are *Klebsiella* species and *Escherichia coli*, whereas the organisms causing late-onset NNC sepsis included *Salmonella* Paratyphi, Group A Streptococcus, *Escherichia coli* and *Pseudomonas* species. *Klebsiella* is the most common organism causing NC sepsis [2, 3]. In Pakistan infections, including septicemia and pneumonia, are the leading causes of hospital mortality, followed by

malignancy and cardiovascular causes [4]. *Klebsiella pneumoniae* is in most cases a hospital-acquired infection and causes pneumonia, septicemia and meningitis in patients [5]. In patients undergone open heart surgery because of pacemaker endocarditis, *Staphylococcus aureus* and *Staphylococcus epidermidis* were the most common causative organisms [6]. In medical sections undertaking invasive procedures, septicemia with methicillin-resistant staphylococci are common [7]. Septicemia is a serious bloodstream infection that can rapidly become life-threatening. It arises from various infections, including those of the skin, lungs, abdomen, and

urinary tract. Patients with septicemia are often treated in a hospital's intensive care unit [8]. In US elderly population the most likely sites of origin of septicemia are the urinary tract and lungs [3]. The most frequent sources of infection are intra-abdominal (gastro-intestinal as well as hepatobiliary), urinary and respiratory tract [9]. Urinary tract infection is a major source of septicemia due to gram negative bacilli. Septicemia due to pneumococcal pneumoniae, eschars, and other skin lesions is also seen [10]. Septicemia can originate due to contamination with skin flora at the site of puncture [11]. Septicemia is a common complication in chronic dialysis patients [12]. Infection, majorly septicemia is second to cardiovascular disease as a cause of death in patients with End-Stage Renal Disease (ESRD) [13]. A research looked at the prognostic value of standard liver and renal function tests for surgical septicemia. Variables related to kidney function changes were linked to the emergence of septic shock. The most accurate predictor of the result of septic shock was creatinine clearance, though serum creatinine and urine output were also useful in this regard. Thus, septic shock with deadly outcome was distinguished from non-fatal septic shock by significantly lower creatinine clearance and urine output values, as well as considerably higher serum creatinine concentrations. Regardless of the result, the variables of renal function stayed within the normal range in septicemia that was not complicated by shock. Serum albumin and total protein concentration among the liver function tests showed notable variations in behaviour between survivors and patients succumbing from persistent septicemia. The results of the other liver function tests did not provide any insight into the course of the septicemia [14].

## METHODS

A cross-sectional research was carried out, and 101 septicemia-diagnosed patients from Mayo Hospital Lahore's medical wards and Accident & Emergency Department were included. In a Lahore tertiary care facility, convenient sampling and non-probability sampling were carried out on septicemia patients. Children, pregnant women, and nursing mothers were not allowed to participate in the research because they were under the age of 30. These patients have undergone thorough examinations to identify the origin and etiology of the illness at the time of presentation. The septicemia brought on by bed ulcers was assessed. The patients' or their legal representatives' consent was obtained. The method of gathering data took into account all other ethical concerns. Additionally, the KEMU Ethical Consideration board gave its permission. Info was entered onto a Performa created specifically for this use. A full blood count, renal function tests, and liver function tests were performed on each

patient. Latest SPSS version was used for data analysis.

## RESULTS

Septicemia due to bed sores was seen in 18 patients out of which 9 were males and 9 were females (Table 1). Bilirubin was low in all males and 6/9 females. Blood glucose was high in 6/9 males and normal in 5/9 females.

**Table 1:** Gender wise variations in RFTs in patients having septicemia due to Bed Sores

| Gender  | Bilirubin |    |   | B. Glucose |   |    | B. Urea |   |    | Creatinine |   |   | Na+ |    |   | K+ |    |   | Total |
|---------|-----------|----|---|------------|---|----|---------|---|----|------------|---|---|-----|----|---|----|----|---|-------|
|         | L         | N  | H | L          | N | H  | L       | N | H  | L          | N | H | L   | N  | H | L  | N  | H |       |
| Males   | 0         | 9  | 0 | 0          | 3 | 6  | 0       | 2 | 7  | 2          | 5 | 2 | 4   | 5  | 0 | 1  | 8  | 0 | 9     |
| Females | 0         | 6  | 3 | 0          | 5 | 4  | 0       | 2 | 7  | 3          | 3 | 3 | 2   | 7  | 0 | 1  | 8  | 0 | 9     |
| Total   | 0         | 15 | 3 | 0          | 8 | 10 | 0       | 4 | 14 | 5          | 8 | 5 | 6   | 12 | 0 | 2  | 16 | 0 | 18    |

Blood urea was high in majority of males and females. Creatinine was normal in 5/9 males but in females creatinine was normal in 3/9, low in 3/9 and high in 3/9 patients. Na+ and K+ were normal in both males and females (Table 2).

**Table 2:** Gender wise variations in LFTs in patients having septicemia due to Bed Sores

| Gender  | ALT |    |   | AST |    |   | ALP |   |    | T. Protein |    |   | Albumin |    |   | Total |
|---------|-----|----|---|-----|----|---|-----|---|----|------------|----|---|---------|----|---|-------|
|         | L   | N  | H | L   | N  | H | L   | N | H  | L          | N  | H | L       | N  | H |       |
| Males   | 0   | 7  | 2 | 0   | 5  | 4 | 0   | 0 | 9  | 0          | 9  | 0 | 4       | 5  | 0 | 9     |
| Females | 0   | 6  | 3 | 0   | 5  | 4 | 0   | 0 | 9  | 0          | 9  | 0 | 4       | 5  | 0 | 9     |
| Total   | 0   | 13 | 5 | 0   | 10 | 8 | 0   | 0 | 18 | 0          | 18 | 0 | 8       | 10 | 0 | 18    |

ALT and AST were normal in majority of males and females. ALP was high in all bed sores patients whereas total protein was normal in all and albumin was low in 8/18 patients (Table 16). WBCs were high in 7/9 males and 8/9 females. Platelets were normal in 9/18 patients and hemoglobin was low in 9/9 males and 6/9 females (Table 3).

**Table 3:** Gender wise variations in CBC in patients having septicemia due to Bed Sores

| Gender  | WBC |   |    | Platelets |   |   | Hemoglobin |   |   | Total |
|---------|-----|---|----|-----------|---|---|------------|---|---|-------|
|         | L   | N | H  | L         | N | H | L          | N | H |       |
| Males   | 0   | 2 | 7  | 4         | 5 | 0 | 9          | 0 | 0 | 9     |
| Females | 0   | 1 | 8  | 4         | 4 | 1 | 6          | 2 | 1 | 9     |
| Total   | 0   | 3 | 15 | 8         | 9 | 1 | 15         | 2 | 1 | 18    |

Bilirubin was normal in 83.33%. It had no association with gender and age. Glucose was high in 56.87% and normal in 43.75%. More females had raised blood glucose levels (56.25%) as compared to males (37.5%). Urea was high in 68.75%, normal in 31.25% and low in 0%. More females had raised urea levels (75%) as compared to males (62.5%) but it wasn't a significant difference. Creatinine was high in 27.77% (5/18), normal in 44.44% (8/18) and low in 27.77% (5/18). It had no association with gender and age. Na was normal in 66.66% (12/18) and low in 33.33%. It had no association with age and gender. K was normal in 100%. It had no association with age and gender. ALT was normal in 72.22% patients in total. It had no association gender wise. AST was high in 55.55% (10/18) and normal in 44.44%. It had no association gender wise. ALP was high 100% in both males and females. It had no association gender wise. ALB

was normal in 55.55%, low in 44.44% and high in 0%. It had no association gender wise. Total protein was normal 100% males and females. WBC was raised in 83.33%. It had no association with age and gender. Platelets were normal in 50% and low in 44.44%. It had no association with age and gender. HB was low in overall 83.33% patients. It was low in 100% of males(9/9) as compared to females 33.33% (6/18).

## DISCUSSION

The blood system is abnormal in almost all septicemia patients. Anemia, leukocytosis and thrombocytopenia are the most prevalent abnormalities [15]. Multiple infections, including those of the urinary system, skin, lungs, and abdomen, can result in septicemia [8]. The most probable places for septicemia to have originated are the lungs and urinary tract [3]. According to our research, bed ulcers are the main reason for septicemia. A localized injury to the epidermis and/or underlying tissue is known as a pressure ulcer. Usually as a consequence of pressure, or pressure combined with shear, over a bony prominence. Pressure ulcers are also related to a number of additional contributing or complicating variables. Pressure ulcers may be attacked by bacteria, which could result in deadly consequences. In tropical Africa, *Staphylococcus aureus* bed sore infections are a recognized leading cause of nosocomial infections and cause significant morbidity and mortality [16, 17]. In current study septicemia due to bed sores was seen in 18 patients out of which 9 were males and 9 were females. Bilirubin was low and blood glucose was high. Blood urea was high in majority of males and females. Creatinine was normal in males and females. Na<sup>+</sup> and K<sup>+</sup> were normal in both males and females. Abdullah et revealed that patients in the surgery ward were more likely to develop bed sores than those in the orthopedics ward (23.3%), the medical ward (5.7%), the ICU (3.0%), and the HDU (2.7%), followed by males (24, 80%) and females (6, 20%), respectively. The research found that bed sore infections occurred between 20 and 40 years ago [18]. Bedsore (pressure wounds) are a common result of nursing care. Although there are many factors that can impact how pressure ulcers develop, tissue ischemia is the final common pathway to ulceration. The frequency of bedsore was linked to getting older, living in a rural area, and being a bedridden patient. In order to reduce the likelihood of bed sores, frequent positioning of the patient, health instruction for patients from rural areas, and special and frequent care for those who are unable to care for themselves were required [19, 20].

## CONCLUSIONS

Septicemia due to bed sores was seen in patients. WBC, ALP and blood urea was high due to septicemia cause by bed sores. Platelets, ALT and AST were normal.

## Authors Contribution

Conceptualization: ZA, AA

Methodology: IT, IS

Formal Analysis: SK

Writing-review and editing: ZA, AA, IT, IS, SK

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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