Staphylococcal sepsis presenting as oozing and bleeding from erosion: An unusual presentation

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ABSTRACT

Septicemia is an infection of blood, characterized by fever, rapid progression to multi-organ failure and death. Purpura, purpura fulminance and ecchymotic lesions on the skin have been described in Staphylococcal sepsis, but frank bleeding from skin erosion have not been reported till date to the best of our knowledge. We report two cases of Pemphigus vulgaris, who developed fever, followed by tenderness, oozing and bleeding from the erosion during their hospital stay though their bleeding and clotting parameters within normal limits. Staphylococcus aureus was isolated from the blood samples of both cases. Intravenous Linezolid improved their fever within 8 hours and tenderness, oozing, bleeding stopped within 10-12 hours. Based on these observations, we suggest that, clinical findings like development of fever, increased tenderness of erosions, followed by oozing and bleeding from these erosions may be the important indicator of septicemia due to Staphylococcus aureus in patients with increased skin loss. Dermatologists must take note of these findings as majority of the inpatients in Dermatology have increased skin loss.

Key word: septicemia, staphylococcus aureus, oozing and bleeding from erosion, dermatology

INTRODUCTION

Septicemia is a life threatening condition necessitating early diagnosis and prompt treatment. It may present with less typical manifestations making the diagnosis challenging, hence an awareness about those manifestation is very important. Staphylococci are thought to cause septicemia in more than 50% of cases of sepsis. 1 According to the American College of Chest Physicians and the Society of Critical Care Medicine, 2 Sepsis is defined as a systemic inflammatory response syndrome (SIRS), characterized by presence of two or more of the following (i.e. abnormal body temperature, heart rate, respiratory rate or blood gas, and white blood cell count.) in response to an infectious process. 3 In severe sepsis, it is associated with organ dysfunction and may cause death. Because of its rapid progression to organ failure and death, early clinical suspicion/diagnosis is vital for the reason that waiting for blood culture report may cause substantial delay in initiation of treatment. Skin findings like purpura, ecchymosis and purpura fulminance are reported in septicemia patients but these findings are not consistent. 4 5

There is paucity of data regarding the clinical presentation of septicemia in patients with increased skin loss. Present report will add to the pool of information and knowledge about the presentation of skin findings in Septicemic patients with increased skin loss.

Case 1

A 35 years old woman patient was admitted to Dermatology ward with Pemphigus vulgaris having erosion in >20% body surface area. She did not have clinical signs and symptoms of infection at admission and her routine hematological investigations during the admission were within normal limits. She was administered Dexamethasone - Cyclophosphamide Pulse(DCP) for 3 consecutive days [6] followed by Prednisolone 20mg/day and Cyclophosphamide 50mg/daily orally was continued. After the initiation of treatment, new lesions of Pemphigus vulgaris stopped appearing and old erosions
showed signs of healing. On the 9th day, she developed intermittent high grade fever with rigor and chill. History and clinical examination did not reveal any secondary infection on erosion or any other system. Repeat hematological investigations were carried out which showed Hb 9.5gm%, TLC 14,500 cells/cu mm, neutrophil (87%), platelets 100000 cells/cu mm, and fasting blood sugar 86 mg/dL. Liver function test and renal function test were within the normal limit. Peripheral smear for Malaria parasite was negative. On 10th day, in addition to fever, she developed tenderness of her erosions, oozing and bleeding [Fig 1].

**Fig. 1.** Oozing and bleeding from the erosion

No other skin and mucosal findings were seen. Diagnosis of disseminated intravascular coagulation due to septicemia was suspected. Investigation for clotting time, bleeding time, prothrombin time and activated partial thromboplastin time was done; Blood sample and swab from erosion were subjected to culture sensitivity. Blood gas analysis could not be performed due to lack of facility. Clotting and bleeding parameters were normal. An empirical IV Linezolid 600mg /12hourly was started. Fever, tenderness over erosion, oozing and active bleeding stooped in about 8 hours after starting antibiotic [Fig 2].

**Fig. 2.** Stoppage of oozing and bleeding

Blood culture report at 72hours grew Staphylococcus aureus sensitive to Linezolid. Culture report from erosion did not grow any organism. Patient is now on follow up for last three months and her Pemphigus vulgaris is under control with Prednisolone 20mg and Cyclophosphamide 50mg per day.

**Case 2**

A 25years old women was admitted to Dermatology ward with diagnosis of Pemphigus vulgaris. She was receiving Prednisolone 10mg/day without control of her disease. Routine investigations on the day of admission were within the normal limit. Dose of Prednisolone was increased to 20mg/day and Azathioprine50mg daily orally was added. On the 4th day, she developed fever (102°F) and her daily activity decreased. Her erosions and systemic condition did not reveal any signs of infection. Hematological investigations showed total Leukocyte count (TLC) 13,000cells/cu mm, neutrophilia (80%), platelets 102000cells/cu mm, random blood sugar 350mg/dl, liver function and renal functions were within the normal limits. Test for Malaria parasite was negative. Two days later, she developed burning and increased tenderness over the erosions with oozing and bleeding [Fig 3].

**Fig. 3.** showing blood trickling down from erosion

Urine output was reduced in 24 hours. Patients serum sodium and serum potassium were normal, fasting blood sugar ranged from 50-86mg/dl on two occasions. Clinically septicemia was suspected. Staphylococcus aureus sensitive to Linezolid was isolated from Blood culture and swab from erosion. Clotting time, bleeding time, platelet count, prothrombin time, and activated partial thromboplastin time(APTT) were within...
the normal limits. Empirical IV Linezolid 600mg /12 hourly were started. Fever, burning and tenderness of erosion, oozing and active bleeding stopped within 12 hours of starting Linezolid. Patients’ general condition also improved in 12 hours. There was no recurrence of fever, tenderness of erosion, oozing and bleeding during the rest of her hospital stay of 15 days. The patient is now on follow up for her Pemphigus vulgaris with Prednisolone 10mg daily and Azathioprine 50mg daily orally.

DISCUSSION

Patients admitted to Dermatology ward with large areas of eroded skin have compromised barrier and immune function of the skin. They are susceptible to develop septicemia and the risk of septicemia is further accentuated by the use of steroids and immunosuppressive agents. Sepsis is an important cause of morbidity and mortality in Dermatology in-patients. It is characterized by fever, with rapid progression to multi-organ failure, and may lead to death. There is paucity of reports on septicemia occurring in Dermatology inpatients and reports describing the skin and mucosal findings in septicemia. Our both the cases had developed septicemia while they were admitted to Dermatology ward, with >10% skin loss and were on corticosteroid and immunosuppressive for their primary disease Pemphigus vulgaris.

Skin findings in septicemia are not characteristic, however, purpura, ecchymosis, and purpura fulminance have been reported in patients of septicemia. In our reported cases purpura, purpura fulminance and ecchymosis were not present on skin or/and mucosa. We observed tenderness, oozing and bleeding on the erosions, which is contrary to the previously reported cases.

Purpura fulminance was reported by Kravitz et al., in 5 cases of septicemia by Staphylococcus aureus strain, that produced superantigens (toxic shock syndrome toxin-1 (TSST-1), staphylococcal enterotoxin serotype B (SEB), or staphylococcal enterotoxin serotype C (SEC)). Similarly, Zumelzu et al., reported a case of HIV positive, who developed purpuric lesion on his leg following a periprosthetic Staphylococcal abscess.

In a series of 39 septicemic cases, of which 6 has Staphylococcal sepsis and had skin rashes (4 cases maculopapular and/or petechial / purpuric rashes, and 2 cases erythematous macule). Authors attributed these skin lesions to be not specific to staphylococcal sepsis, however, they observed that, only the Staphylococcal sepsis cases had the pulmonary infections, cutaneous findings and increased mortality. Our findings are comparable with this report.

Gillet et al., in their studies of pneumonia cases observed, that, pneumonia due to Panton-Valentine leukocidin (PVL) positive Staphylococcus aureus caused bleeding in airway and leucopenia, which was contrary to our cases as none had pulmonary symptoms or leucopenia. In the present reported cases though there was a bleeding from erosion and clinical findings were consistent with septicemia, none of hematological parameters were consistent with DIC.

CONCLUSION

Based on our observation we suggest that tenderness, oozing and bleeding from erosion may be an important clue to suspect septicemia by Staphylococcus aureus strain in patients with increased skin loss. Clinicians and dermatologist should be aware of these findings in patients with increased skin erosion.

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