MRSA as a causative factor for ecthyma gangrenosum: a rare case report

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ABSTRACT
Ecthyma gangrenosum is a skin manifestation of Pseudomonas aeruginosa in immunocompromised individuals. Here we report a case of a 64-year-old diabetic female with Ecthyma gangrenosum lesions on both lower limbs, admitted for surgical debridement. Pus culture taken during surgery showed growth of Methicillin-resistant Staphylococcus aureus. The patient was started on appropriate antibiotics with reasonable glycemic control using parenteral insulin. The patient responded well to the above treatment and was discharged.

INTRODUCTION
Ecthyma gangrenosum is a skin infection associated with Pseudomonas aeruginosa sepsicaemia in neutropenic and immunocompromised individuals. It is a necrotising vasculitis, and the first clinical observation is usually grouped vesicles with surrounding erythema, progressing to form a gangrenous ulcer with a black/grey eschar surrounded by an erythematous halo. (Pavithran, 1991). They can also be caused by other gram-ve bacteria, fungi and viruses, but rarely by gram +ve organisms such as staphylococcus. (Chang et al., 2012). In this report, we present a diabetic individual with Ecthyma gangrenosum of both lower limbs, admitted for wound debridement. Pus taken for culture & sensitivity reported MRSA and Blood Culture was negative. This shows Ecthyma gangrenosum can be caused by non-pseudomonas organisms with no symptoms of bacteremia even in the non-immunocompromised.

Case Report
A 64 year known diabetic woman came to the surgical OPD with complaints of painful ulcers of 4-5 days duration in both lower limbs. On general examination-patient was afebrile and her vitals were normal. Local examination showed 6x4 cm ulcer on the right leg and 5x5 cm size ulcer on the left foot. Ulcers were indurated and covered with black eschar Figure 1. There were cellulitis and tenderness around the ulcer area. No discharge from the ulcers seen. Blood haematology reports, x-rays & ECG were normal. Blood sugar was elevated and was 340mg/dl. Urine sugar was ++. Doppler showed a mild posterior tibial narrowing in both lower limbs. The patient was admitted for glycemic control with parenteral insulin. She was taken up for surgical debridement under GA and broad-spectrum antibiotic cover (Inj. Meropenem 500 mg iv bd). The
eschar was removed and wound debridement done. Pus was sent for staining and culture and sensitivity testing. Grams staining showed pus cells, and gram +ve cocci in clusters, staining for AFB and fungal elements were negative. Report of pus culture showed MRSA growth with sensitivity only to gentamycin, tetracycline, tigecycline, vancomycin and linezolid by Vitek method. Blood and urine cultures reported negative.

The patient was started on Tab Linezolid 600mg bd with local mupirocin ointment dressings for which she responded well and was discharged with advice to continue the above treatment along with oral hypoglycemic drugs for glycemic control. Review after 1 week showed proper healing of both ulcers and skin graft was suggested for her left foot Figure 2.

DISCUSSION

Ecthyma gangrenosum can occur in forms ranging from vascular lesions to necrotic ulcers covered with black/ grey eschars mainly in neutropenic or the immunocompromised patients. Bacterial invasion of arteries in the dermis and subcutaneous tissues produce necrotizing vasculitis. Clinical presentation of EG starts as a red macule that progresses to a nodule or ulcer, with a central area of necrosis. The 2 main types are, EG with bacteremia and without bacteremia. (Huminer, 1987). In the first type, the blood cultures are positive, and the prognosis is worse than the non-bacteremic second type. Generally, 50% lesions are in the gluteal and perianal regions, 30% on extremities and 20% on the face and body. (Duman et al., 2006)

EG typically is caused by pseudomonas aeruginosa. Other gram -ve organism such as Aeromonas hydrophila, Escherechia coli, Klebsiella pneumoniae, Serratia marcescens, Xanthomonas maltophilia, Morganella morgani, Citrobacter freundii, etc. and fungi [Candida albicans, Aspergillus fumigatus, Fusarium solani, Scyta lidium dimidiatum and viruses (Herpes simplex virus) and in gram +ve bacteria Staphylococcus and Streptococcus species can cause EG. (Reich et al., 2004)

The differential diagnosis includes Fournier’s gangrene, hypersensitivity vasculitis, polyarteritis nodosa, cryoglobulinemia, fixed drug eruption and pyoderma gangrenosum. Based on skin & soft tissue infection guidelines, treatment regimen would comprise of 5 to 10 days of antibiotics therapy, depending on patients clinical response. Surgical debridement plus IV antibiotic therapy is recommended for hospitalized patients. Empirical treatment with broad-spectrum or extended-spectrum penicillin in combination with an aminoglycoside should be used. (Sen et al., 2009). Clindamycin, trimethoprim-sulfamethoxazole, tetracycline(doxy+minocycline) or linezolid could be used for the treatment of MRSA and dicloxacillin, cephalaxin, nafcillin cefazolin employed for treatment of MSSA. (Liu et al., 2011)

CONCLUSION

EG though commonly caused by P. aeruginosa associated with septicaemia in the immunocompromised host, it can also be caused by gram +ve bacteria such as Staphylococcus aureus without blood invasion. Therefore gram +ve coverage (after culture and sensitivity testing) should be considered early in patients showing no clinical improvement with antibiotic treatment for pseudomonas.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the way, the
patient has given full consent for her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

REFERENCES


