ECTHYMA GANGRENOSUM BY PSEUDOMONAS AERUGINOSA- A RARE CUTANEOUS MANIFESTATION

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PRESENTATION OF CASE

Ecthyma gangrenosum is a rare and invasive cutaneous infection caused by Pseudomonas aeruginosa in the majority of cases, typically affecting immunocompromised patients, particularly those with neutropenia. An 1-year-old male child was presented to Paediatric Department with multiple ulcers showing granulation tissue and eschar, biggest ulcer over the left buttock. A culture from the ecthyma lesion revealed the presence of Pseudomonas aeruginosa, but the results of repeated blood cultures were negative. The patient responded well to piperacillin + tazobactam to which the isolate was susceptible in vitro. Considering high rate of mortality, early diagnosis and prompt effective treatment is mandatory.

Ecthyma gangrenosum is a well-recognised, but uncommon cutaneous infection classically associated with P. aeruginosa bacteraemia and usually occurs in immunosuppressed patients.[1] Ecthyma gangrenosum occurs in up to 6% of patients with systemic P. aeruginosa infection, but can also occur as a primary cutaneous infection by inoculation. Clinically, similar lesions may also develop as a result of infection with other agents such as S. aureus, A. hydrophila, Enterobacter spp., Proteus spp., Burkholderia cepacia, Serratia marcescens, Aspergillus spp., E. coli and Candida spp. The main site of ecthyma gangrenosum lesions is the gluteal or perineal region (57%).[2] Although, this lesion can spread to other body sites. The typical lesion begins as a red or purpuric macule that vesiculates and then ulcerates. Patients with bacteraemia commonly have lesions in apocrine areas. EG was first described in association with Pseudomonas septicaemia by Barker in 1897.

Karthik, 1-year-old male child was admitted in MVJ Medical College with history of multiple ulcers over left buttocks since 15 days, which initially he had fever and the following day, mother noticed warm, raised, tender and indurated lesion on the left buttocks of the child. The lesion progress over the next two days to a haemorrhagic bluish bulla that ruptured to form a central area of necrosis surrounded by an erythematous halo. On physical examination, the child weighed 10 kg. He was well developed with a toxaemic appearance. Axillary temperature was 38°C, <3 secs. Chest x-ray was normal. Respiratory and cardiovascular systems were within normal limits. Abdomen was soft with normal bowel sounds. The liver and spleen were not palpable. Central nervous system was normal. On local examination, granulation tissue and eschar, biggest ulcer over the left buttock of size 8 x 8 cm with undermined edge and floor showing granulation tissue. A culture from the ecthyma lesion revealed the presence of Pseudomonas aeruginosa, but the results of repeated blood cultures were negative. The patient responded well to piperacillin + tazobactam to which the isolate was susceptible in vitro. Considering high rate of mortality, early diagnosis and prompt effective treatment is mandatory. This is the first report of ecthyma gangrenosum caused by Pseudomonas aeruginosa from our hospital. This case is being reported herein to alert other clinical microbiologists and paediatricians to avoid septicaemic life-threatening complications of ecthyma gangrenosum.

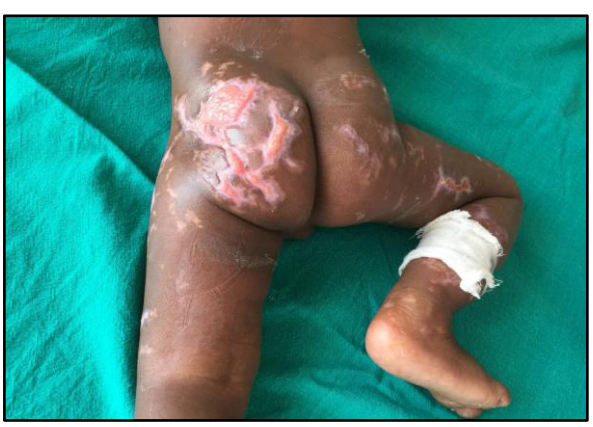

Figure 1

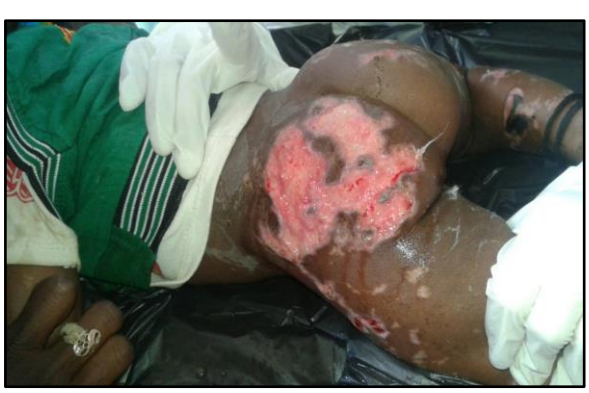

Figure 2

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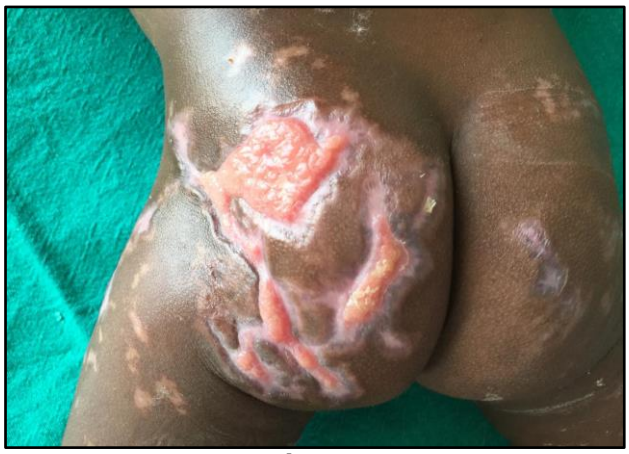

Figure 3

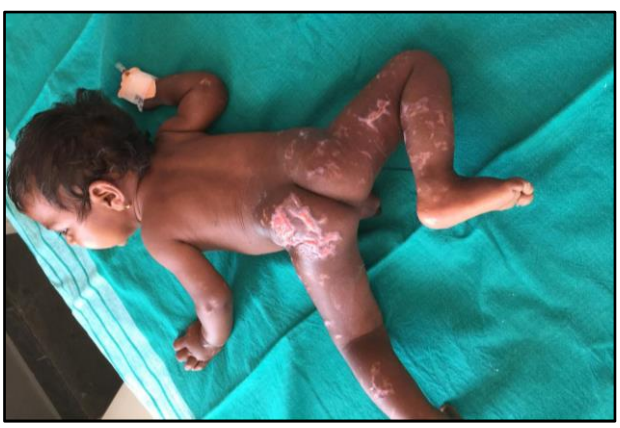

Figure 4

CLINICAL DIAGNOSIS

The main site of ecthyma gangrenosum lesions is the gluteal or perineal region (57%).[1] Although, this lesion can spread to other body sites in which metastatic lesions appear on both trunks and lower extremities as was the case in our patient. Another major clinical feature in almost all patients is the presence of neutropenia. This disease is a life-threatening septicaemic infection and has a high mortality. To decrease the mortality of this disease, the treatment should include prompt recognition of the skin lesion, appropriate antibiotic coverage against Pseudomonas aeruginosa and surgical debridement. The therapeutic intervention in our case was the empirical use of combination chemotherapy along with nutritional support. The exact mechanism of the pathogenesis of ecthyma gangrenosum caused by Pseudomonas aeruginosa in neutropenic patients is poorly defined. The primary inciting factor appears to be the presence of numerous viable organisms at the point of involvement. Dissolution of the elastic lamina of blood vessels by Pseudomonas elastase allows for liberation of the bacilli into the subcutaneous tissues.[4] Further prolific multiplication of the organism in subjacent tissue with elaboration of exotoxin A and proteases leads to the ulcerative lesion, which is characterised by haemorrhage encircled by a rim of reactive erythema.

PATHOLOGICAL DISCUSSION

Ecthyma gangrenosum is a characteristic dermatologic manifestation of severe and invasive infection caused most commonly by Pseudomonas aeruginosa. However, in some cases, it may be caused by Klebsiella pneumoniae and other species of Pseudomonas like Pseudomonas maltophilia, Pseudomonas burkholderia, Pseudomonas cepacia, etc. Most cases of ecthyma gangrenosum have been associated with concomitant septicaemia,[3] but it may also rarely develop without bacteraemia due to Pseudomonas aeruginosa. Ecthyma gangrenosum is a well-described entity, which may occur with a frequency of 30% during the course of Pseudomonas aeruginosa septicaemia. The characteristic clinical appearance is red macules that progress to a central areas of necrosis surrounded by an erythematous halo. This lesion represents a formidable skin sign of a potentially life-threatening systemic infection.

FINAL DIAGNOSIS

This cutaneous manifestation associated with Pseudomonas aeruginosa exotoxin A production has also been reported by Young et al.[5] In neutropenic patients, the clinicians should be aware of such skin manifestations and consider ecthyma gangrenosum as a likely diagnosis to avoid the life-threatening septicaemic infection and mortality. The high mortality is reported with delayed diagnosis and therapy. Systemic therapy that includes coverage for pseudomonas (i.e., aminoglycoside and an antipseudomonal penicillin) should be initiated as soon as possible.

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