CASE REPORT

Ecthyma gangrenosum in a neonate: not always *pseudomonas*

Ashish Pathak,^{1,2,3} Poonam Singh,¹ Yogendra Yadav,¹ Mamta Dhaneria¹

¹Department of Pediatrics, RD Gardi Medical College, Ujjain, Madhya Pradesh, India

²Department of Public Health Sciences, Global Health (IHCAR), Stockholm, Solna, Sweden

³Department of Women and Children's Health, International Maternal and Child Health Unit, Uppsala University, Uppsala, Sweden

Correspondence to

Dr Ashish Pathak,
drashishp@rediffmail.com

SUMMARY

Ecthyma gangrenosum (EG) is a cutaneous manifestation of invasive infection usually caused by *pseudomonas*, but can be caused by many bacteria, fungal and viral infections. We present the first reported case of EG caused by invasive *Escherichia coli* in a neonate. A neonate presented with evidence of sepsis and a rapidly evolving 3×3.5 cm² well-circumscribed haemorrhagic and necrotic ulcer on the left groin. There was evidence of decreased perfusion of the lower limb owing to pressure effect of the ulcer. The child responded well to anticoagulation and antibiotic therapy. It is crucial to clinically suspect EG and promptly start empiric antibiotic therapy covering *pseudomonas* to decrease the morbidity and mortality. However, other viruses, fungus and bacteria including *E coli* should also be considered in the differential diagnosis of EG in a neonate.

BACKGROUND

Ecthyma gangrenosum (EG) is classically a cutaneous manifestation of invasive infection caused by *Pseudomonas aeruginosa*. The clinically well-defined lesion, of gangrenous ulcers with black-grey eschar, is usually seen in immunocompromised and critically ill patients.^{1–3} However, the entity has also been reported in individuals not suffering from bacteraemia.³ We present a case of EG caused by invasive infection of *Escherichia coli* in a neonate.

CASE PRESENTATION

A 12-h-old, home-delivered, male neonate was brought for evaluation of a rapidly increasing lesion over left leg. On examination the baby was of 34 week of gestational age, weighing 1300 g. The baby was lethargic, hypothermic (core temperature 36°C), tachypnoeic (respiratory rate 66/min) and not accepting feeds.

The left groin showed a lesion 3×3 cm², large, erythematous and necrotic (figure 1). The left lower limb was cold, oedematous, cyanosed with multiple purpuric spots. Left dorsalis pedis and popliteal pulses were feeble on palpation.

A provisional diagnosis of EG and sepsis caused by *pseudomonas* was made and empiric antibiotics initiated.

INVESTIGATIONS

The septic screen was suggestive of sepsis (haemoglobin 10 g/dl, platelet count 100 000/μl, total leucocyte count 2900/μl, 71% polymorphs and 15% band cells; elevated (52 mg/l) C reactive protein). The coagulation profile was normal.

Figure 1 A 16-h-old neonate with a well-circumscribed haemorrhagic and necrotic lesion of about the size of 3×3.5 cm² in left groin, a typical ecthyma gangrenosum lesion. Also note the oedema in the left lower limb and multiple purpuric spots.

A colour Doppler of the affected limb did not reveal any thrombus.

DIFFERENTIAL DIAGNOSIS

The closest possible differential diagnosis of EG in a neonate is noma neonatorum which is also caused by *pseudomonas*.

TREATMENT

In view of clinical evidence of poor perfusion of the left lower limb we started low-molecular-weight heparin in the dose of 1.5 mg/kg/dose twice a day. Blood culture and swab culture from the lesions base revealed heavy growth of *E coli*. The *E coli* was non-ESBL (extended spectrum β lactamase) producing. The antibiotics were changed to amoxicillin and clavulanic acid and amikacin according to culture report. Mupirocin ointment was also applied locally on the ulcer before the culture report. Packed red cell transfusions in the dose of 10 ml/kg were given twice. The lower limb

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perfusion improved after day 3 of heparin therapy, which was continued for 14 days. The baby was discharged after completing 14 days of antibiotics.

OUTCOME AND FOLLOW-UP

On follow-up after 4 weeks the lesion of the left groin healed with a scar.

DISCUSSION

The clinically well-defined lesion, of gangrenous ulcers with black-grey eschar, is usually seen in immunocompromised and critically ill patients.² This is the first reported case of EG caused by *E coli* in a neonate. Also in adults only seven cases of EG caused by *E coli* have been reported till date.³

The common sites of distribution of EG lesions are the gluteal or perineal region, extremities, trunk and face.³ In the present case the lesions were distributed just below the inguinal area in the anterior part of the thigh (figure 1).

EG typically presents as single or multiple greyish black eschars with surrounding erythema and necrosis. EG results from disseminated infective vasculitis and may occur in the form of macules, papules or nodules. The lesions can have a central haemorrhagic vesicle or bulla that when ruptured leaves a punched out indurated ulcer with elevated oedematous edges and central necrosis. The ulcer is usually surrounded by an erythematous halo.^{3 4}

Apart from *pseudomonas* and *E coli*, EG can be caused by bacteria like *Aeromonas*, *Chromobacterium violaceum*, *Citrobacter freundii*, *Corynebacterium diphtheriae*, *Klebsiella pneumoniae*, *Neisseria gonorrhoeae*, *Serratia marcescens*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Yersinia pestis*, etc and fungus like *Aspergillus fumigatus*, *Candida albicans*, *Curvularia* species and herpes simplex virus.³

Learning points

- ▶ Ecthyma gangrenosum (EG) typically presents as single or multiple greyish black eschars with surrounding erythema and necrosis and is usually caused by *pseudomonas*.^{2 4}
- ▶ EG can be caused by a variety of bacteria, fungus and viruses.³
- ▶ EG is a clinical diagnosis but should be confirmed by appropriate diagnostics including culture.

Contributors AP, PS and YY collected the clinical details and photographs of this patient report. AP performed the literature review and drafted the manuscript. MD verified the diagnosis and other scientific facts. All the authors are responsible for clinical follow-up of the case. AP, PS and MD revised the paper critically for substantial intellectual content. All authors read and approved the final manuscript.

Competing interests None.

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