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Case Report

A case of Meleney's abdominal gangrene in Hamdard Institute of Medical Sciences & Research

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Abstract
Meleney's gangrene is a rare, rapidly spreading destructive subcutaneous tissue infection which most commonly occurs at post-surgical sites and has a mortality rate of as high as 30-40% (up to 90% in diabetics). Diagnosis of meleney's gangrene is difficult as the initial signs are not specific. If recognised and treated early the prognosis of this disease improves significantly. The major approach for treatment of meleney's gangrene is aggressive debridement and good antibiotic cover. We hereby present a case of a female OAS, obese and hypertensive patient who had come to our centre on account of spreading infection and septic shock, who was aggressively resuscitated and taken up for emergency surgery in the form of aggressive debridement and was then managed with serial debridement and antiseptic dressings. The patient was successfully discharged on post op day 25 and the wound healed completely by post op day 35. We report this case due to its rarity and its clinical importance and how aggressive debridement and antiseptic dressings are the best cure for this disease even after a century of its discovery.

Keywords: *Meleney's gangrene, Post-operative synergistic gangrene*

INTRODUCTION
Meleney's disease is rare, life threatening, rapidly advancing infection that progresses along fascia and subcutaneous tissues most commonly occurs in post-surgical sites. It is a surgical emergency needing a high index of suspicion, early diagnosis and aggressive surgical debridement. Delay often increases the risks of mortality. A type of Necrotizing fasciitis which results from the action of one or more bacteria that proliferate in the subcutaneous tissues. Bacteria spread rapidly along superficial and deep fascial tissue planes facilitated by enzymes (hyaluronidase) that degrades polysaccharides responsible for tissue adhesion. Excretion of endotoxins stimulates the production of cytokines damaging the endothelial lining and causes leaking of fluid into extravascular space. Reduced intravascular blood flow results in vessel occlusion by microthrombi[1]. Tissues become ischemic resulting in significant pain and causing overlying skin necrosis. These hypoxic conditions enable the proliferation of more anaerobic bacteria accelerating the disease process. Anaerobic bacteria produce carbon dioxide, hydrogen, nitrogen, hydrogen sulfide, and methane. These gases

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accumulate in the tissues, giving rise to the characteristic sign of crepitus and appearance of gas on imaging. The fascia is particularly susceptible to necrosis given it is relatively avascular. Liquefaction of the fascia is a diagnostic feature. Progression to the deeper fascia of intermuscular septum and myonecrosis are late signs and indicate poor prognosis. There is microbial invasion of local blood vessels, which together with toxins cause severe sepsis, multisystem organ failure, and death[2]. First described by Dr Meleney and Dr Brewer in 1926[3]. The mortality rate reported due to meleney's disease is as high as 34%[4].

We present a case of 45 years old morbidly obese Indian female with meleney's gangrene following Total Abdominal Hysterectomy with bilateral salphingo-oophorectomy successfully treated with aggressive debridement, Antibiotics and Antiseptic dressings. We report this case due to its rarity and importance of early diagnosis and management.

Case Report

A 45 years old morbidly obese Indian female referred to our center on account of spreading infection and septic shock 14 days following total abdominal hysterectomy and bilateral salpingo-oophorectomy done at a private hospital in New Delhi. (fig.1)

Fig.1 Day 1 when patient presented to emergency

On general physical examination at the time of presentation patient was drowsy, afebrile, had a pulse rate of 120/min, blood pressure of 70/34 mmHg and was tachypneic with respiratory rate of 26/min. On examination a 15 cm long pfannenstiel incision was seen with sutures in place, foul smelling discharge was appreciated from the wound. Grossly edematous abdominal wall with peeled off skin and necrotic patches around the incision extending cranially from incision to infraumbilical region. Two large bore IV cannula's were secured immediately followed by aggressive resuscitation with IV fluids. Patient was catheterized to monitor urine output.

Routine investigations showed haemoglobin of 10.1g/dl, total leucocyte count of 33,000 with 90.6% neutrophils, blood urea nitrogen 140.1mg/dl, serum creatinine 4.01mg/dl, random plasma glucose – 98, HbA1C – 5.6%. CECT abdomen was done outside which showed a collection with air foci seen in the soft tissues at the anterior abdominal wall at the scar site. The collection measures 13.6 cm x 4.1 x 4.5 (approx.. 135ml) there is stranding in the fat of anterior abdominal wall. uterus not seen (operated), no intraabdominal collection, hepatosplenomegaly. With a diagnosis of synergistic gangrene patient was taken for emergency surgery in the form of local debridement under sedation which revealed gangrene

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of the anterior abdominal wall with foul smelling extensive involvement of fascia and dishwater pus. (fig. 2)

Fig. 2 Intraoperative finding showing necrosis of subcutaneous tissue

Fig. 3 After excision of dead tissue

Dead tissue was excised, wound washed with copious saline, wound was kept open, packed and dressed (fig. 3). Injectable vancomycin, metronidazole, meropenem were started. Wound culture sensitivity was sent which reported Acinetobacter baumanni and klebsiella species which was resistant to all the known antibiotics. Blood and urine cultures were sent and were sterile. Daily debridement and twice daily dressings with hydrogen peroxide and povidone iodine were done. Patients general condition and wound progressively improved. The counts returned to normal on 6th post-operative day. Healthy granulation tissue was seen at the base of the wound. On 13th post op day repeat wound cultures were sent which were reported to be sterile. (fig. 4)

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Fig. 4 Healthy granulation tissue on 13th postoperative day

On 16th post op day secondary closure of the wound was done and 18F romovac suction drain was placed inside the wound . (FIG. 5)

Fig. 5 secondary wound closure

Patient was discharged on 25th post op day after drain removal. After 1 week when the patient came for follow up suture line was healthy and patient was told to review after 1 week. The wound had healed completely on follow up.(fig. 6)

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Fig. 6 complete healing of wound on 35th postoperative day

Discussion

Meleney's gangrene affects the skin and subcutaneous tissues but not the deep fascia except in advanced cases, it may follow intraabdominal surgery, around the incision or sutures[5] but cases associated with colorectal disease, genitourinary disease, fistulae or occurring spontaneously are also described[6]. It is a rare, deadly form of necrotising fasciitis which begins as a superficial small ulcer post-surgery, followed by infection of subcutaneous tissue which leads to small vessel thrombosis and eventually necrosis[7]. Most patients with post-operative synergistic gangrene have pre-existing immunosuppressive conditions such as chronic renal failure, HIV, diabetes mellitus or are elderly.

Meleney demonstrated a consistent bacterial picture that comprised of a streptococcus which could be isolated from the advancing edge of the lesion and gram negative rods which could be identified from the central necrotic area[8]. In our case a mixed growth of Acinetobacter baumanni and klebsiella could be isolated from the wound. The absence of streptococcus in our case is probably due to antibiotic coverage given to her before she presented to us.

Diagnosis of meleney's gangrene is difficult as early signs are usually very vague and are misdiagnosed as cellulitis or abscess. Frieschlag et al in 1985 found that meleney's gangrene if treated after 24 hours of recognition had mortality rate as high as 70% as compared to 35% if treated within 24 hours[9].
The diagnostic criteria for Meleney's ulcer includes: a slowly progressive superficial necrotizing process, evidence of a variety of microaerophilic, anaerobic, facultative, or amoebic organisms, hypoxic wound environment and microvascular thrombosis in a full thickness ulcer[7]. In any case of post-operative gangrene a plain radiograph should be taken for presence of gas to differentiate it from gas gangrene.

When Dr Brewer and Dr Meleney first described this condition in 1926 the treatment of choice was zinc oxide and surgical debridement. With introduction of newer antimicrobials zinc oxide was replaced with modern day antibiotics as the choice of treatment. Even though these antibiotics significantly reduce the bacterial load they have a little effect on the primary site. So aggressive surgical debridement is most important. Serial debridement's are usually necessary to completely remove the dead devitalised tissue. Additional treatment measures such as hyperbaric oxygen therapy can be used as an adjunct to this. Combination of increased pressure and high oxygen concentrations in hyperbaric oxygen therapy allows for

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large amounts of oxygen to be dissolved into the blood and tissues, allowing for the revitalization of tissues with poor circulation[10]. After the necrotic spread has been terminated, hyperbaric oxygen therapy may further promote healing by stimulating angiogenesis and granulation tissue formation. In our case the patient was taken up for emergency aggressive debridement followed by serial debridement done at bedside along with antibiotic cover in the form of vancomycin, metronidazole and meropenem and was kept on intermittent BIPAP. Hyperbaric oxygen therapy was not used due to non-availability of the same in our setup.

Conclusion

Unfortunately, many signs of meleney's gangrene are initially overlooked which leads to unnecessary higher mortality. In the post-surgical patient, signs of sepsis, wound dehiscence and discharge at the operative site may suggest Meleney's gangrene. The essence of treatment lies in aggressive debridement and good antibiotic cover. Healthcare providers at the periphery should be made aware of this condition for its prompt recognition and diagnosis.

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