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NECROTIZING FASCIITIS SECONDARY TO CENTIPEDE STING WITH UNDERLYING DIABETES MELLITUS TYPE 2.

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ABSTRACT
Centipede sting resulting or progressing to ulceration and necrosis is a very rare entity. Bite due to insects (centipede sting) have been described as the cause of necrotizing fasciitis especially in patients who are immunocompromised, diabetes, burns and trauma. We report on a rare case of necrotizing fasciitis in a 50 year old malay gentleman who presented with a necrotic patch over the right side of the back following a centipede sting with underlying diabetes mellitus type 2. The case is being reported for the first time from Malaysia.

KEY WORDS: Centipede sting, Diabetes type 2, Laboratory risk indicator, Necrotizing fasciitis.

INTRODUCTION
Necrotizing fasciitis (NF) is colloquially known as "Flesh eating disease" (and also known as hemolytic streptococcal gangrene, Meleney ulcer, acute dermal gangrene, hospital gangrene, suppurative fasciitis, and synergistic necrotizing cellulitis).[1] It is a rapidly progressive inflammatory infection of the fascia, with secondary necrosis of the subcutaneous tissues.

It is a life threatening rare disease, with an incidence ranging from 0.15 to 0.55 cases per 100,000 populations.[2] The entry to the body may be a history of minor injury such as a small cut, graze or pinprick, insect or animal's bites or a large wound due to trauma or surgery. Among the insect bites, centipede sting resulting in NF has been rarely reported.[3] Those at increased risk of NF include diabetics, immunosuppressed individuals, obese people, drug abusers, and people with severe chronic illness.[4]

We report on a unique case of NF of the back caused by centipede bite, with underlying diabetes mellitus type 2.

CASE REPORT
A 50 year old malay man presented with progressively growing reddish colored swelling associated with burning pain over right scapular region following a centipede sting while asleep. He also noticed change in color (black) of 3 days duration along with fever and mild chest pain of 1 day duration. He was a known case of hypertension and diabetes mellitus type 2 and was on irregular treatment. Family history of diabetes mellitus type 2 was evident as his father, mother, brother and sister was suffering from them. He underwent open cholecystectomy 5 years back and arthrotomy of right hip for septic arthritis 2 years back.

Clinical examination revealed a 15x10cm necrotic lesion extending from upper scapular region involving the whole of right scapula up to mid-axillary region. The necrotic lesion was irregular and tender with poorly defined margin. The surrounding skin was erythematous with reddish purple discoloration and minimal sloughing of skin. Right shoulder range of motion was limited due to pain with right axillary lymphadenopathy. All other examination was normal.

Clinical diagnosis of NF was made and the patient was investigated. The laboratory reports showed CRP – 152mg/l, WBC-count – 20.83x103/mm3, hemoglobin 14.3g/dl, sodium – 137 mmol /L, creatinine – 86 µmol/L and glucose – 12.5 mmol/L. Pus for culture and sensitivity showed the growth of staphylococcus aureus.

With the Laboratory risk indicator for necrotizing fasciitis (LRINEC) score of 6 the likelihood of NF was considered. He was taken up for early and aggressive surgical debridement of necrotic tissue with broad spectrum antibiotic therapy. Continuous medication for diabetes and hypertension were taken care off. Along with continuous wound debridement and daily hydrocolloid dressings the patient improved well from

the lesion. The patient was discharged with planning for split skin grafting at a later stage.

DISCUSSION

A centipede bite is an injury resulting from the action of a centipede's forcipules (pincer-like appendages) that pierce the skin and inject venom into the wound. Most of the injury, due to a sting is non-lethal.[3] This is the first reported case of NF due to centipede sting from Malaysia.

The history of a centipede bite was fairly straightforward as the patient typically saw and identified the centipede once bitten. Symptoms include pain, swelling, erythema, headaches, palpitations, nausea, vomiting, and local pruritus.[3] The wound, if left uncared for, is susceptible to local ulcer formation and progress to NF, as in our case. Those at susceptibility for developing NF are alocohol abuse, HIV infection, malignancy, diabetes mellitus, chronic renal failure and vascular insufficiency patients. This was applicable to our case as the patient was a known case of diabetes mellitus type -2. The mean age group varies from 32 to 57 years[5] as similar to the presented case.

The causative organisms vary from bacteria (aerobic or anaerobic) to mixed flora. During the last 2 decades, literature shows that NF is usually polymicrobial rather than monomicrobial.[2] The initial infection can be from almost any cause (for example, cuts on the skin, punctures wounds, surgical incisions, or rarely, insect bites [spiders, biting flies]), as in the presented case due to centipede bite.

NF can affect any part of the body, it is more common in extremities (36-55%) followed by trunk (18-64%) and perineum (36%).[6] Early symptoms resemble those of cellulitis,[7] but progressive skin changes include bronzing and induration of the skin followed by purple bullae (thin-walled fluid-filled blisters) formation, within 3-5 days and finally bluish grey hue of frank skin necrosis[2] similar to the presented case.

Often a preliminary diagnosis of NF is based on the patient's symptoms, including the medical and exposure history as described above. Two scoring systems based on laboratory studies have been described to help in the diagnosis. Wall et al. studies[8] showed a white blood cell count > 15,400/mm and serum sodium <135 mEq/L, were predictive in distinguishing NF and non-necrotizing soft tissue infection with sensitivity of 90% and specificity of 70%. While Wong et al.[9] developed a robust - the LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score, capable of detecting even clinically early cases of NF as shown in Table - 1. A score greater than or equal to 6 indicates that NF should be seriously considered with a positive predictive value of 92%.[9] Our patient met these criteria (Table – 1).

If the disease is confirmed, or is strongly suspected, definitive treatment is first and foremost surgical, along with antibiotic therapy and supportive care and must be initiated without delay.[2, 4] Surgical debridement of the wound should be carried out and the regimen of surgical debridement is continued until tissue necrosis ceases and the growth of fresh viable tissue is observed as we carried out in our case.

Antibiotic therapy is a key consideration to cover streptococci, staphylococci, Gram-negative bacilli and anaerobes.[10] Our patient was on triple antibiotic regimen (cephalosporin, aminoglycoside and metronidazole) for a week. Along with the antibiotic therapy daily dressings are needed at the bedside to facilitate granulation (Fig – 1). Dressing changes with either silver sulfadiazine, alginate or hydrogel dressings should be administered in order to achieve good results.[10] In our case hydrocolloid dressings were done.

Both underlying disorders of type 2 diabetes mellitus and hypertension was regularly monitored and appropriate treatment was given. As the raw area (Fig – 2) was very wide, split skin graft was planned to cover the exposed area at a later date.

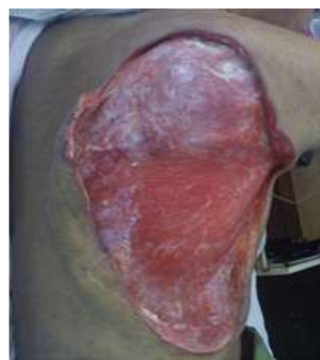

Fig. 1: Raw area after NF – infection.

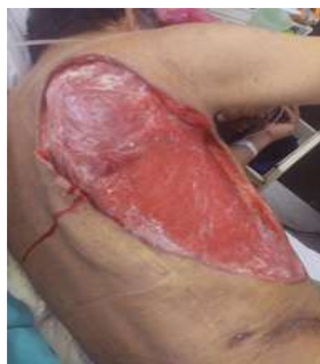

Fig. 2: After Hydro-colloid dressings.

Table – 1. Laboratory risk indicators score for NF.

Investigations		C- reactive protein mg/L	White blood cell count /mm^3	Haemo - globin g/dl	Serum Sodium mEq/L	Serum Creatinine µmol/L	Serum Glucose mmol/L
Wong.et. al series	Value	< 150 > 150	< 15 15 - 25 > 25	> 13.5 11-13.5 < 11	> 135 < 135	< 141 > 141	< 10 > 10
	Score	0 4	0 1 2	0 1 2	0 2	0 2	0 1
Present study	Value	152	20.83	14.3	137	86	12.5
	Score	4	1	0	0	0	1

CONCLUSION

NF following a centipede bite is a rare entity with underlying diabetes mellitus. It is a polymicrobial type of lesion. Diagnosis of NF is often difficult but multiparametric approach will optimize in early diagnosis. NF does not begin unless an infection has already started in tissue; immediate effective treatment of any infection is likely to prevent the disease. The key aspects of management include early diagnosis, proper administration of broad-spectrum antibiotics followed by regular surgical debridement along with second surgeries when needed.

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