British Orthopaedic Association

BOA Instructional Course Necrotising fasciitis- Infection

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32 year old IVDU.Swollen left lower leg X 3 days.
Attends A/E dept unwell

Increasing pain in the leg and foot

Tender to palpation

Blood Tests

- Hb 11.9
- WCC 12.9
- Sodium 141
- CRP 238
- Creat 294
- Glu 5

LRINEC score

Parameter	Score min	Score max
C – reactive Protein		
150	0	4
White Cell Count		
15 - 25	0 - 1	2
Haemoglobin		
135 – 110 and lower	0 - 1	2
Sodium		
135	0	2
Creatinine		
140	0	2
Glucose		
10	0	1

LRINEC score

- A LRINEC score ≥ 6 points is a reasonable cutoff to rule in NF, but a LRINEC score < 6 points does not rule out diagnosis.
- No prospective trials validating the LRINEC score

Early clinical findings

- Pain out of proportion to examination findings
- Swelling and erythema
- Rapidly progressive cellulitis
- Tenderness beyond apparent area
- Indistinct margins

Late Symptoms

Tissue necrosis,

Rapidly spreading swelling &inflammation

Bullae

Necrosis

Severe pain(then no pain)

High fever,chills and rigors

Tachycardia

Systemic toxicity

With progression skin colour,blisters develop & skin can become anaesthetised with focal areas of skin necrosis

Necrotising fasciitis

Uncommon soft tissue infection

Rapidly spreading cellulitis

Extensive necrosis skin,subcutaneous tissues and superficial fascia

Often misdiagnosed las cellulitis or an abscess because of the absence of specific hard features

High mortality if diagnosed late

Necrotising fasciitis
Red flags

Pain out of all proportion

Hypotension

Altered mental state

Eryhyema progressing along the limb

Fluctuance

Haemorrhagic bullae

Skin necrosis

Clinical examination

- Tense skin
- Bullae initially clear then haemorrhagic
- discoloration
  - ischemic patches
  - cutaneous gangrene
- swelling, edema
- dermal induration and erythema
- subcutaneous emphysema (gas producing organisms)

Finger test for necrotising fasciitis

- 2cm incision
- Feel of tissue
- Dishwater fluid
- Greyish necrotic tissue
- Tissues peel off with minimal resistance

Risk factors

- Diabetes mellitus
- IVDU
- Immunocompromised patients
- Excessive alcohol intake
- Old age/obesity/malnourished

Pathophysiology

- Thought to be due to bacterial enzymes(lipases and hyaluronidase)
- Extent of fascial necrosis is more widespread than overlying skin changes
- Arterial thrombosis resulting in focal areas of necrosis

Diagnosis

- Delay in diagnosis significantly increases mortality

Microbiology

Type 1 NF (polymicrobial/synergistic)
80% of NF seen in patients.Caused by combination anaerobic, aerobic and facultative anaerobic bacteria. Commonly affects immunecompromised patients.

Type II NF
Around 20% NF caused by a single organism, usu Gram positive organism, either GAS or *Staphylococcus aureus*.

Type III NF: Gram-negative monomicrobial NF

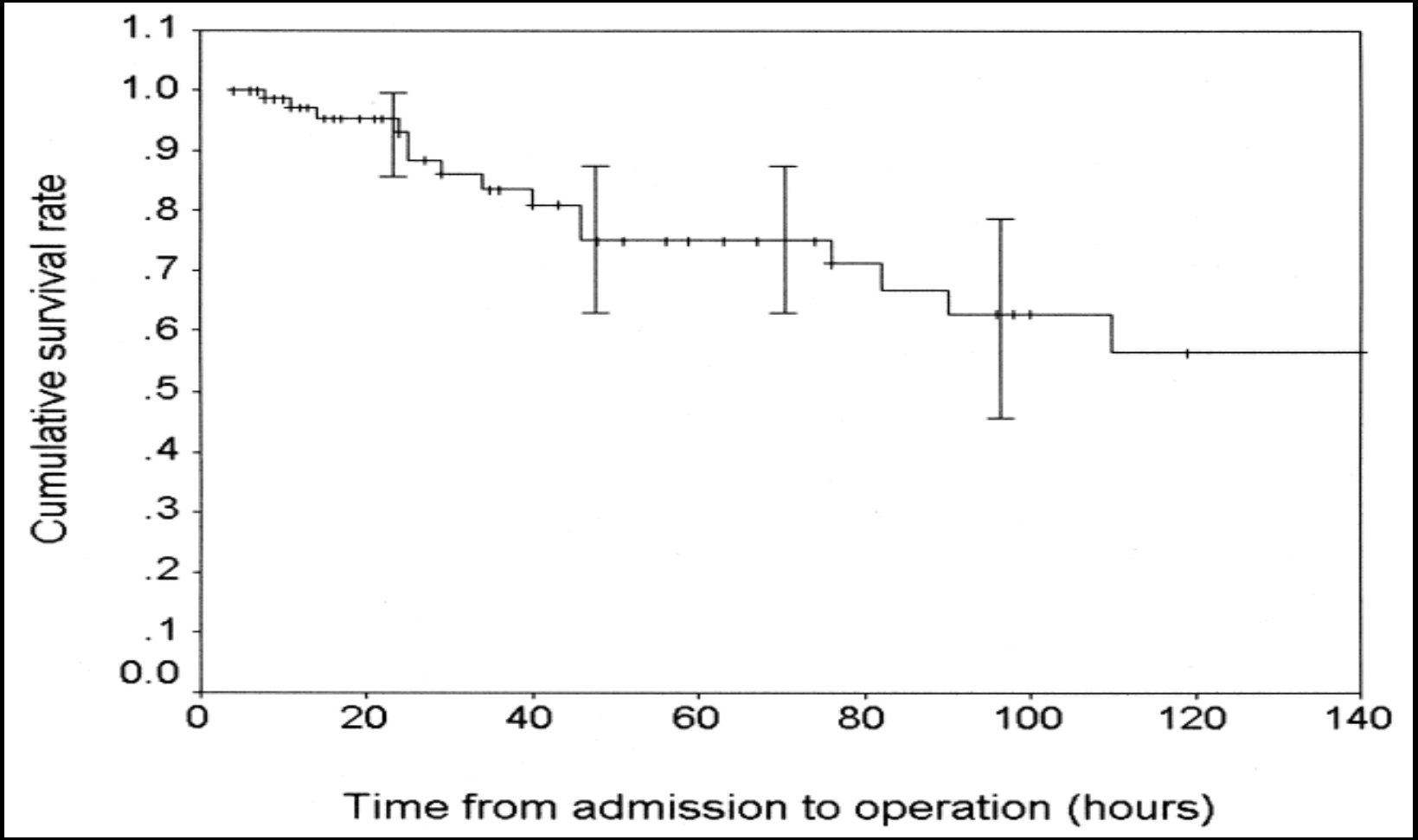
Includes marine-related organisms commonest are *Vibrio species*, *V. damselae* and *V. vulnificus* Wound contamination with seawater accounts for 1/4 of cases

Type IV NF: Fungal
Affects immune-compromised patients organisms.
Candidaor *Mucor* and *Rhizopus sp.* may occur after trauma responsible for almost 1/3 NF cases

Management

- Early diagnosis and emergency surgery
- Immediate multidisclipinary input
- Broad spectrum antibiotics — meropenem + clindamicin
- Aggressive resuscitation/Supportive Care ITU
- Serial debridement until no further necrosis or infection seen
- Frequent re-evaluation

Predictors of mortality

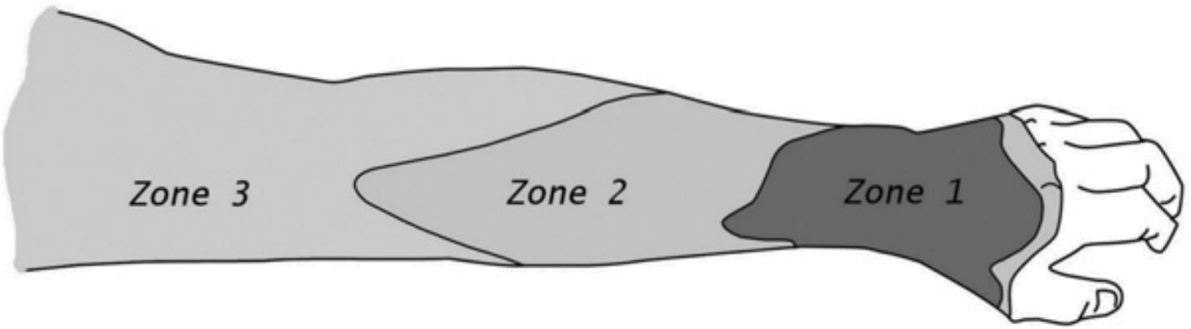


- delay between admission and debridement

Management

- Immediate multidisclipinary input
- Emergency surgery – radical excisional debridement
- Antibiotics — meropenem + clindamicin
- Supportive Care

How do you assess what to debride?



No Bullae

No erythema

Normal skin

Ser. Bullae

Erythema

Induration

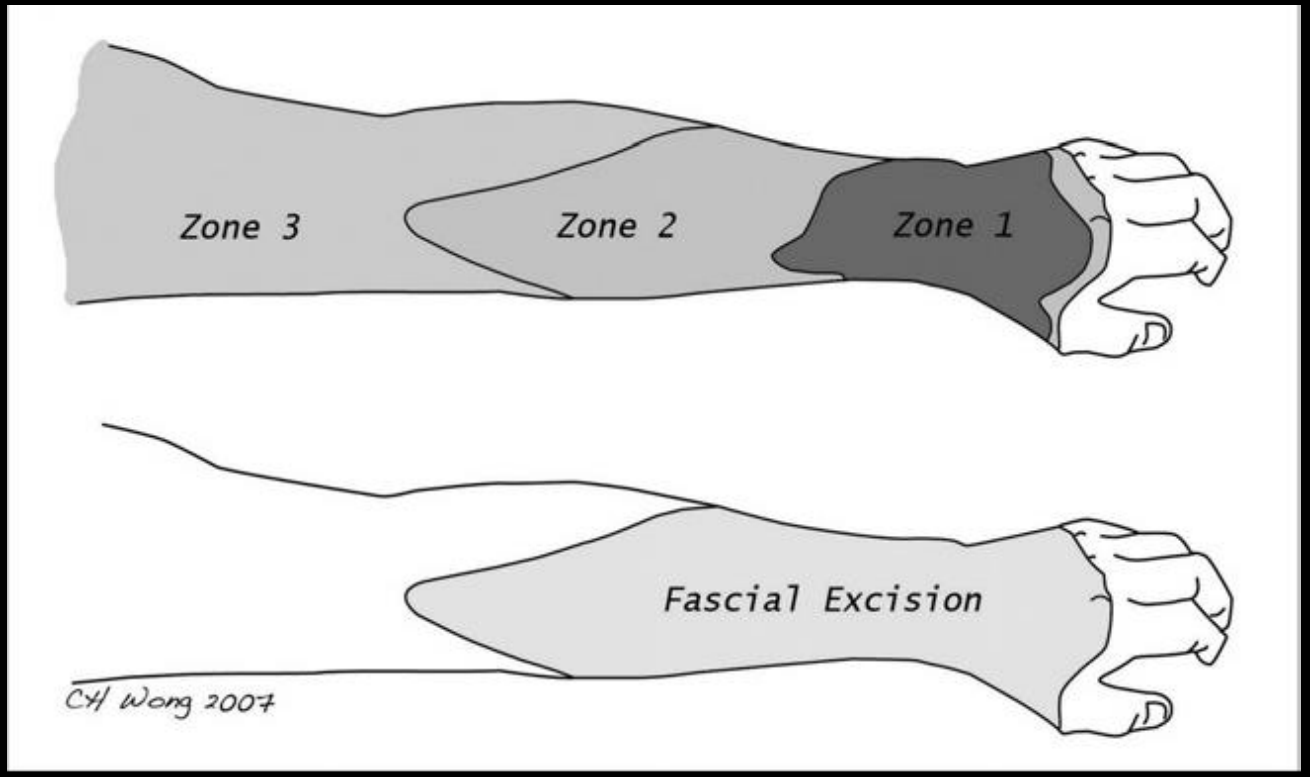
Hhgic. Bullae

Gangrene

Fixed staining

Wong CH, 2007

Radical excisional debridement



Confirmation of diagnosis

- Greyish necrotic fascia
- Lack of resistance to dissection
- Lack of bleeding
- Foul-smelling liquid

Structures to debride

- All necrotic skin and tissue
- Any tissue of questionable viability
- At least 10mm margin of healthy fascia
- Sampling from healthy fascia

Management

- Monitoring in ITU
- Serial monitoring of physiology
- Revision debridement – planned or unplanned

Necrotising Fasciitis

Birender Kapoor presents information on Necrotising Fasciitis and Severe Soft Tissue Infections.

Part 1 https://www.boa.ac.uk/orthopodcast/necrotising-fasciitis/