FROM DIAGNOSIS TO RECOVERY: NAVIGATING NECROTIZING FASCIITIS OF THE BREAST

UNIT II
DEPARTMENT OF GENERAL SURGERY
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INTRODUCTION

- NECROTIZING FASCIITIS (NF) COMMONLY KNOWN AS "**FLESH EATING DISEASE**"
- RAPIDLY PROGRESSIVE NECROSIS INVOLVING FASCIA AND SUBCUTANEOUS FAT
- THE INFECTION TYPICALLY TRAVELS ALONG THE FASCIAL PLANE, WHICH HAS A POOR BLOOD SUPPLY
- EXTREMITIES ARE THE MOST COMMONLY AFFECTED SITES
- NECROTIZING FASCIITIS OF THE BREAST **- UNCOMMON**
- PROGRESS RAPIDLY - CARRIES A **HIGH MORTALITY RATE**

CASE HISTORY

- 54 YEAR OLD FEMALE
- ADMITTED IN ENT FEMALE WARD IN DY PATIL HOSPITAL FOR NECK SWELLING (?MNG)
- REFERRED TO SURGERY DEPARTMENT FOR RASH & DIFFUSE SWELLING OF LEFT BREAST SINCE 1 DAY
- RASH OVER LEFT BREAST SINCE 1 DAY – BULLOUS, SUDDEN IN ONSET, RAPIDLY PROGRESSED FROM CENTRAL PART TO INVOLVE MOST OF THE UPPER BREAST,
- A/W PAIN – DULL ACHING
- NO C/O FEVER, TRAUMA, INSECT BITE, BURNS
- PAST H/O – K/C/O HYPOTHYROIDISM ON RX, K/C/O TYPE 2 DM ON RX

LOCAL EXAMINATION

- DIFFUSE ENLARGEMENT OF LEFT BREAST
- BLACKISH DISCOLOURATION PRESENT OVER NAC EXTENDING TILL UPPER OUTER QUADRANT
- LOCAL RISE OF TEMP +
- TENDERNESS +
- HAEMORRHAGIC BULLAE +
- NIKOLSKY SIGN +
- EDEMATOUS & ERYTHEMATOUS SURROUNDING SKIN
- NO CREPITUS
- NO PALPABLE AXILLARY LYMPH NODES
- RIGHT BREAST – NORMAL

THE NIKOLSKY SIGN REFERS TO THE ABILITY TO INDUCE BLISTERING OR SLOUGHING OF THE EPIDERMIS (OUTER LAYER OF SKIN) BY APPLYING LATERAL PRESSURE TO APPARENTLY NORMAL-LOOKING SKIN ADJACENT TO A BLISTER OR EROSION.

INVESTIGATIONS

- HB – 8.7 G/DL
- TLC – 17900 CELLS/MM^3
- CREATININE- 1.2 MG/DL
- NA- 135 MEQ/L
- CRP – 3.2 MD/DL
- RBSL – 200 MG/DL
- HBA1C – 7.4%
- REST ALL LABS - WNL

DIFFERENTIAL DIAGNOSIS

- GAS GANGRENE
- CELLULITIS OF LEFT BREAST
- MASTITIS
- NECROTIZING FASCIITIS OF BREAST
- BREAST ABSCESS

SURGERY

- LEFT BREAST LOCAL DEBRIDEMENT → TOILET MASTECTOMY
- INTRAOP FINDINGS:
  - ENTIRE LEFT BREAST WITH NIPPLE AREOLA COMPLEX AND SKIN WITH GANGRENOUS CHANGES
  - OOZING OF SEROSANGUINOUS/PURULENT FLUID
  - PECTORALIS FASCIA WAS NECROSED
  - PECTORALIS MUSCLE WAS EDEMATOUS
- TISSUE WAS SENT FOR C/S & HPE

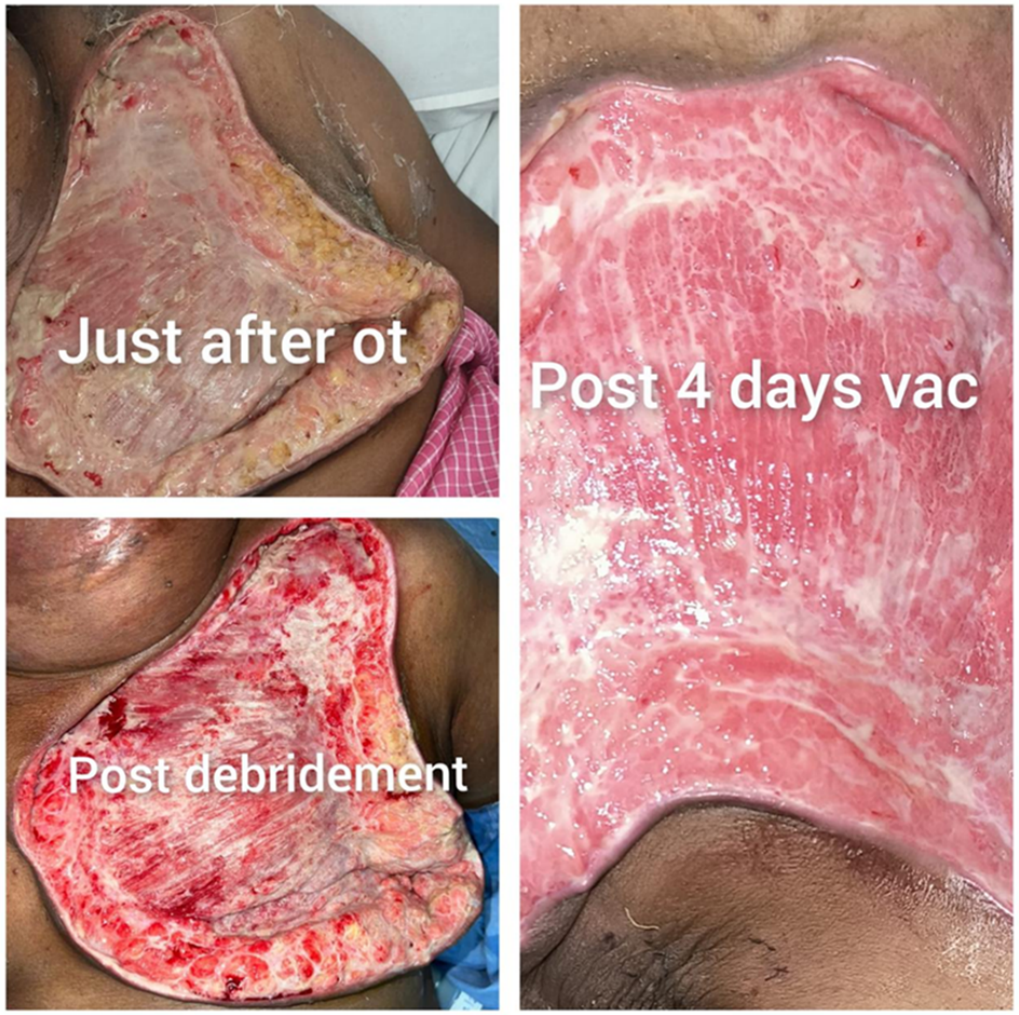
POST-OP COURSE

- ICU – 2 DAYS - MONITORING
- ANTIBIOTICS

  INJ PIPERACILLIN TAZOBACTAM TDS

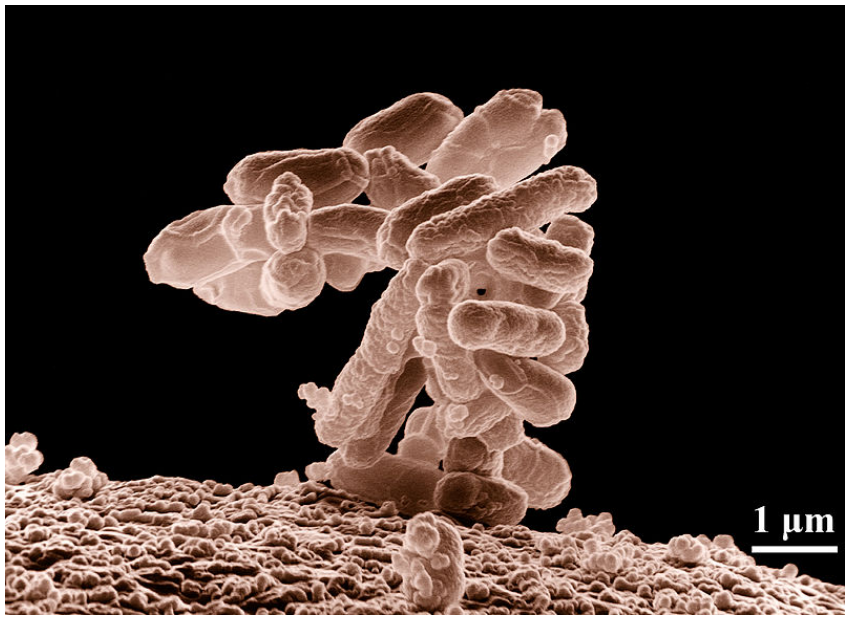
  INJ METRONIDAZOLE TDS

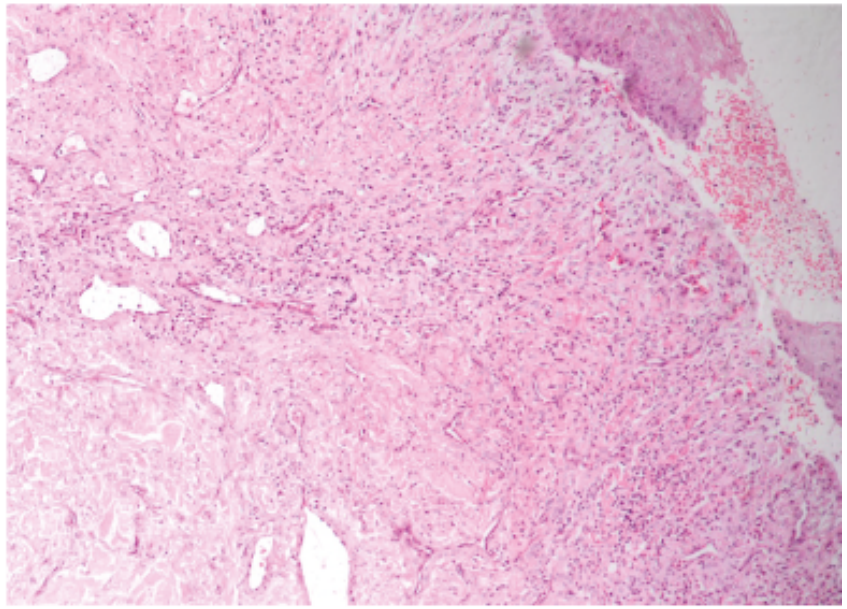
  FOR 14 DAYS
- REGULAR BEDSIDE DEBRIDEMENT AND DRESSING
- POD 5 – VAC DRESSING – 5 DAYS



CULTURE REPORT – E. COLI

SENSITIVITY → AMIKACIN, MEROPENEM, PIPERACILLIN & TAZOBACTAM AND CHLORAMPHENICOL





HPE – ACUTE SUPPURATIVE PATHOLOGY WITH EXTENSIVE NECROSIS OF BREAST

POST OP WOUND HEALING

POD 5

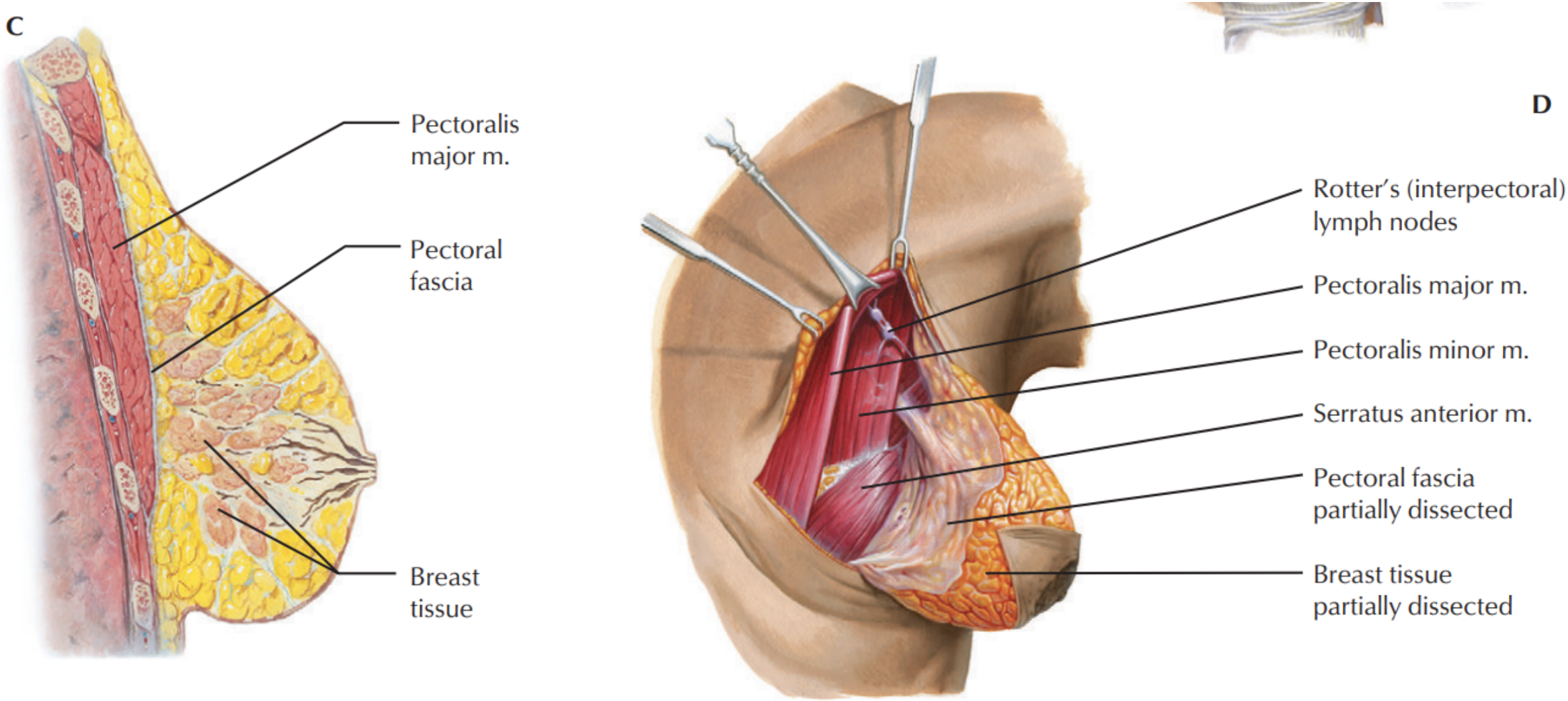
POD 20

POD 45

Discussion

- INITIALLY, THE OVERLYING TISSUES ARE UNAFFECTED, POTENTIALLY DELAYING DIAGNOSIS AND SURGICAL INTERVENTION.

ANATOMY OF PECTORAL FASCIA



HISTORY OF THE DISEASE

First described by Hippocrates in the 5th century.

In the 19th century popularly known as “Malignant ulcer”, “Gangrenous ulcer”, “Putrid ulcer”, “Phagedenic ulcer”.

Termed “Hospital gangrene” by Joseph Jones, Civil war Surgeon, 1871.

Variants described as Fournier’s gangrene (Fournier, 1883) and Meleney’s gangrene (Meleney, 1920).

Wilson, 1952, coined the term Necrotizing fasciitis.

CLASSIFICATION

Classification of Necrotizing Fasciitis		
Type	**Microorganism**	**Associations**
I	Polymicrobial	Diabetes, Immunocompromise, Peripheral Vascular Disease
II	Monomicrobial ◉ Group A Streptococcus ✦ MRSA	◉ Otherwise healthy, history of trauma (may be minor) or surgery ✦ IVDU, athlete, institutionalized
III	*Vibrio vulnificus*	Marine exposure
IV	Fungal	Immunocompromise

Our case

REFERENCE

A clinicopathological study of necrotizing fasciitis - an institutional experience. Peer SM, Rodrigues G, Kumar S, Khan SA. J Coll Physicians Surg Pak 2007; 17:257

ETIOLOGY

- INCIDENCE - 3 CASES PER 10,000 HOSPITAL ADMISSIONS
- MOST COMMONLY INFECTED AREAS – EXTREMITIES
- BREAST → RARELY INVOLVED - ONLY 25 PREVIOUSLY REPORTED CASES
- RISK FACTORS
  - DM
  - PVD
  - IMMUNOCOMPROMISED STATES
  - LIVER DISEASE
  - CKD
  - OLD AGE
  - SMOKING

DIAGNOSTIC CLUES

- HIGH INDEX OF SUSPICION.
- HISTORY OF SURGERY/ INJURY/ BREACH IN SKIN FOLLOWED BY PAIN, REDNESS, SWELLING AND FEVER.
- ASSOCIATED CO MORBIDITIES.
- ON EXAMINATION- AFFECTED PART SWOLLEN, EDEMA STRETCHING BEYOND VISIBLE SKIN ERYTHEMA, WARM, EXQUISITELY TENDER, WOODY HARD FEEL OF SUBCUTANEOUS TISSUE.

PATHOPHYSIOLOGY

MICROORGANISMS INFECT SUSCEPTIBLE SOFT TISSUES

POLYMORPHONUCLEAR CELL INFILTRATION OF DERMIS AND FASCIA

INVASION OF SOFT TISSUE BLOOD VESSELS BY MICROORGANISMS AND INFLAMMATORY CELLS

OBLITERATIVE ENDARTERITIS, NECROSIS OF BLOOD VESSEL WALL AND THROMBOSIS OF SMALL VESSELS.

LIQUEFACTIVE NECROSIS OF FASCIA

SIGNS

- FEVER, TACHYCARDIA & RAPID PROGRESSION TO SEPTIC SHOCK
- OEDEMA STRETCHING BEYOND VISIBLE SKIN ERYTHEMA
- WOODY-HARD TEXTURE TO THE SUBCUTANEOUS TISSUES
- **DISPROPORTIONATE PAIN IN RELATION TO THE AFFECTED AREA**

- THE DIAGNOSIS IS CLINICAL

THE BEST DIAGNOSTIC STRATEGY IS TO PERFORM SURGICAL EXPLORATION WHEN THERE IS HIGH CLINICAL SUSPICION.

LRINEC SCORE

LRINEC Scores

Laboratory Finding*	LRINEC Score
CRP level (mg/dL)	
<15	0
≥15	4
WBC count (cells per mm^3)	
<15	0
15–25	1
>25	2
Hemoglobin level (g/dL)	
>13.5	0
11–13.5	1
<11	2
Sodium level (mmol/L)	
≥135	0
<135	2
Creatinine level (mg/dL)	
≤1.6	0
>1.6	2
Glucose level (mg/dL)	
≤180	0
>180	1

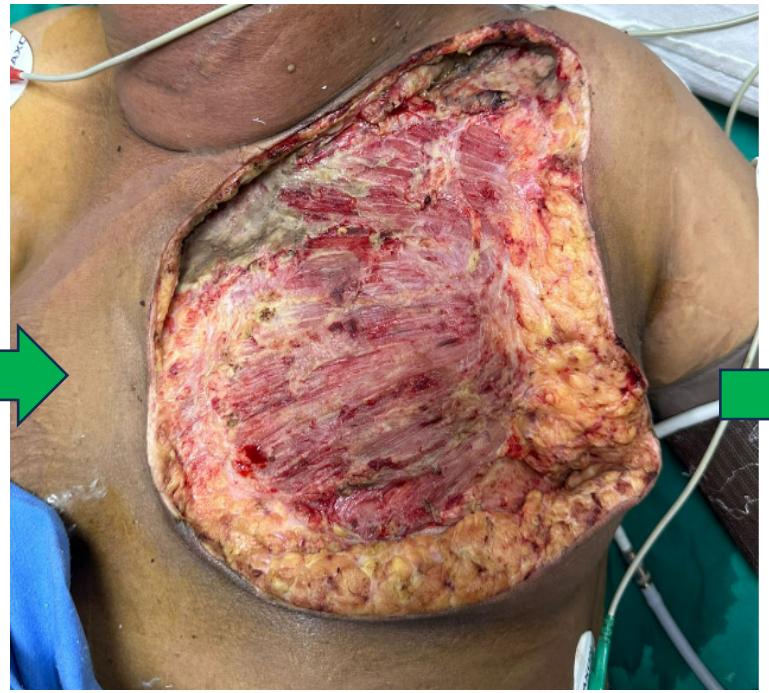
Stage	Score	Probability of necrotizing fasciitis (%)
Low	<5	50
Moderate	6-7	50-75
High	>8	>75

TREATMENT

- EARLY DIAGNOSIS + IMMEDIATE INTERVENTION
- **BETTER PROGNOSIS**

DEBRIDEMENT

- EMERGENCY DEBRIDEMENT IS TREATMENT OF CHOICE.
- DELAY OF MORE THAN 24 HOURS INCREASES THE MORTALITY RATE.
- REDEBRIDEMENT IS FREQUENTLY REQUIRED.



SUPPORTIVE MANAGEMENT

FLUID RESUSCITATION

ANTIMICROBIAL ADMINISTRATION

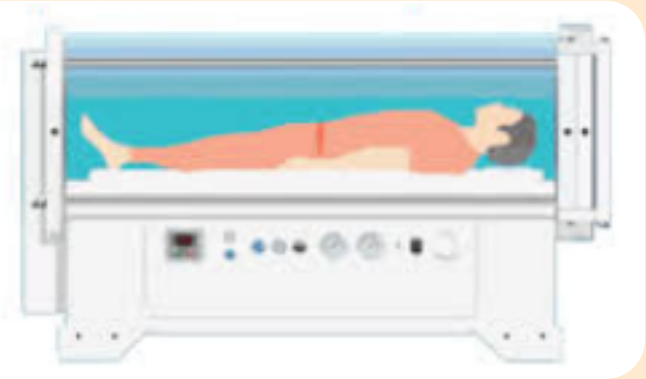
GRAM POSITIVE ORGANISM

GRAM NEGATIVE ORGANISM

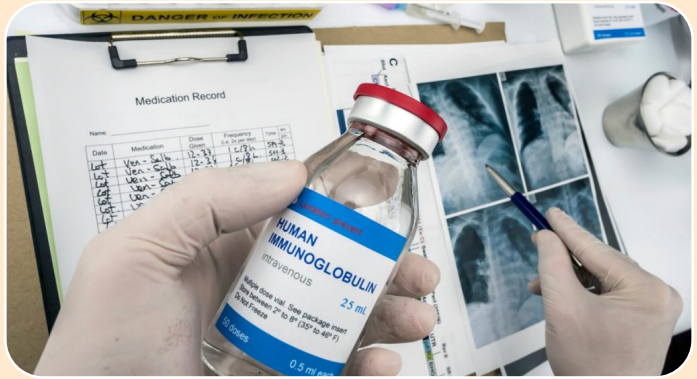
ANAEROBIC ORGANISM

NUTRITION

ADJUVANT THERAPIES FOR ULCER HEALING



HYPERBARIC OXYGEN THERAPY.



INTRAVENOUS IMMUNOGLOBULIN.

VACUUM ASSISTED WOUND CLOSURE

? - ETIOLOGY

AGGRESSIVE NATURE OF DISEASE TYPICALLY RAPID PROGRESSION TO A FATAL OUTCOME

DIAGNOSTIC CHALLENGES – BREAST NF

DELAY IN DIAGNOSIS – ANATOMICAL CONSIDERATIONS

MISDIAGNOSIS - CELLULITIS, MASTITIS, ABSCESS OR INFLAMMATORY BREAST CARCINOMA

CONCLUSION

- NECROTIZING FASCIITIS IS A SURGICAL EMERGENCY
- REQUIRES A HIGH INDEX OF SUSPICION
- IF SUSPECTED PATIENT SHOULD BE TAKEN FOR SURGERY
- EARLY SURGICAL INTERVENTION PROVIDES GOOD PROGNOSIS
- SUPPORTIVE CARE IS ALSO REQUIRED
- FASTER HEALING OF ULCER REQUIRES ADJUVANT THERAPIES WHICH PRESERVES QUALITY OF LIFE

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THANK YOU