Necrotizing Fasciitis

An Essay

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NF is a rapidly progressive, soft-tissue infection characterized by extensive necrosis of the skin and subcutaneous tissue. In order to decrease the mortality rate of this life-threatening condition, rapid diagnosis, immediate surgical intervention, and broad-spectrum antibiotics are critical. However, other adjuvant therapies have been considered, such as hyperbaric oxygen and intravenous immunoglobulin.

NF remains one of the most devastating soft tissue infections in modern medicine. Many adjuncts have been described to help in the early recognition of the disease. What is needed in the management of necrotizing fasciitis is a clear and focused approach to the problem. Early surgical debridement decreases mortality and the aim is to diagnose the condition early, ideally within 24 h of admission. Depending on resources available, the managing team should exclude the diagnosis of necrotizing fasciitis with utmost urgency.

If MRI is needed, it should be performed within the next few hours. Certainly decision should not be delayed beyond 24 h while waiting for imaging to be available. Future developments of diagnostic adjuncts that can help in the identification of patients with necrotizing fasciitis should be focused on cheap and easily performed ‘bedside’ tests that are readily available.

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List of abbreviations

AFNDI	Acute Febrile Neutrophilic Dermatosis
AHEI	Acute Hemorrhagic Edema of Infancy
BC	Before Christmas
BHS	Beta Hemolytic Streptococci
CDC	Center of Disease Control
CT	Computerized Tomography
DM	Diabetes Mellitus
DNAse	Diribo Nucleotide Adinosinase.
FDA	Food and Drug Administration.
FTSG	Full Thickness Skin Graft.
GAS	Group A Streptococci.
GIT	Gastro-Intestinal Tract.
G+ve	Gram positive.
HBO	Hyper-Baric Oxygen.
HC	Hemorrhagic Cellulitis.
H&E	Hematoxyline & Eosine.
ICU	Intensive Care Unit.
INF-α	Interferon Alpha.
IVDA	Intravenous Drug Abuse.
IVIG	Intravenous Immunoglobulin.
LRINEC	Laboratory Risk Indicator for Necrotizing fasciitis

MRI	Magnetic Resonance Imaging.
MRSA	Methicillin Resistance Staphylococcus Aureus.
MtsR	Metallo-Regulator gene.
NF	Necrotizing Fasciitis.
NJ	New Jersey
NPV	Negative Predictive Value.
NPWT	Negative Pressure Wound Therapy.
NSAID	Non Steroidal Anti-Inflammatory Drug.
NSTI	Necrotizing Soft Tissue Infection.
PCR	Polymerase Chain Reaction
PPV	Positive Predictive Value.
PVL	Panton Valantine Leukocidin.
SPE	Streptococcal Pyrogenic Exotoxin.
SSA	Streptococcal Super Antigen.
STSG	Split Thickness Skin Graft.
STSS	Streptococcal Toxic Shock Syndrome.
TNF-α	Tumor Necrosis Factor alpha.
UK	United Kingdom.
US	United States.
VAC	Vacuum Assisted Closure.
VSU	Venous Stasis Ulcer.

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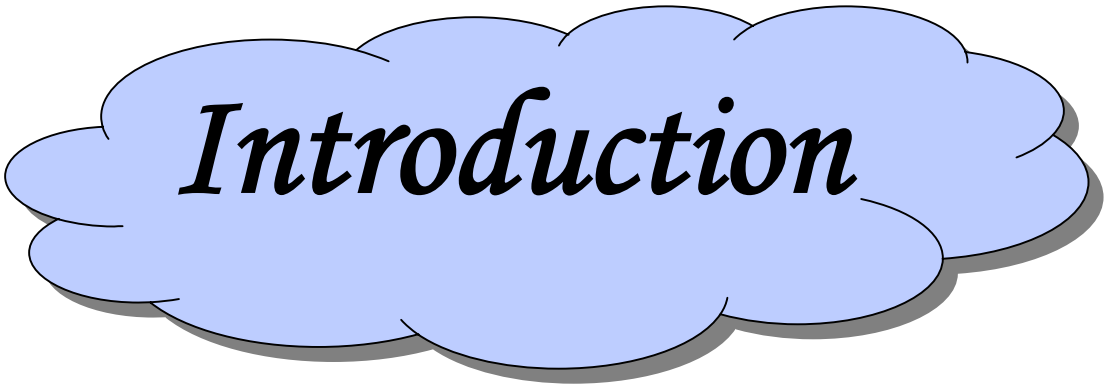
Introduction

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Necrotizing fasciitis is a life threatening, soft tissue infection characterized by rapidly spreading inflammation and necrosis of the skin, subcutaneous fat and fascia **(Kotrappa et al., 1996).**

The incidence of necrotizing fasciitis in adults has been reported to be 0.40 cases per 100.000 populations, while the incidence in children is 0.08 cases per 100.000 populations **(Fustes et al., 2002).**

Despite the uncommon nature of this condition, over the last decade, there has been a five-fold increase in the incidence of necrotizing fasciitis **(Sharkawy et al., 2002).**

Although largely unexplained, the aging of population and the increase in numbers of immunosuppressed individuals may be related. Rapid early intervention may prevent morbidity and mortality, but, left untreated, mortality rates as high as 73% have been reported **(Kotrappa et al., 1996).**

Mortality varied with age, with increasing mortality seen in older age groups. For examples, patients over 50 years of age have a mortality rate of 37%, while those over 60 years of age have a mortality rate of 62% **(Hoeffel & Hoeffel, 2002).**

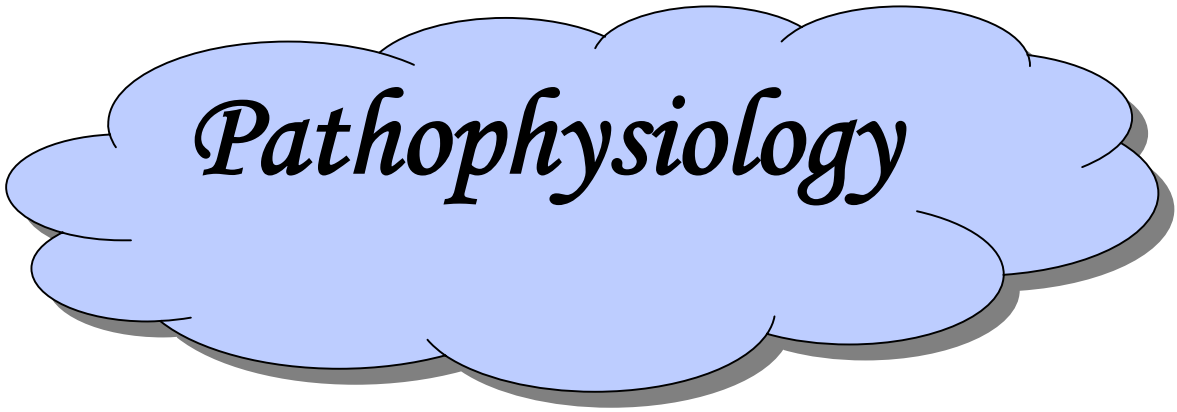
The earliest reference of this condition was made by Hippocrates in the 5th century BC, who spoke of it as a complication of erysipelas **(Gonzalez, 1998).**

However, the term necrotizing fasciitis was not coined until 1952. Over the years, other terms have been used to refer to necrotizing fasciitis, including flesh-eating bacteria syndrome, suppurative fasciitis, hospital gangrene and necrotizing erysipelas **(Lombardi et al., 2000).**

Patients are typically taken to surgery based on a high index of suspicion, determined by the patient's signs and symptoms. In necrotizing fasciitis, aggressive surgical debridement is always necessary to keep it from spreading and is the only treatment available. Diagnosis is confirmed by visual examination of the necrotic tissues and by the tissue samples sent for microscopic evaluation. Early medical treatment is often presumptive; thus, antibiotics should be started as soon as the necrotizing fasciitis is suspected. Initial treatment often includes a combination of intravenous antibiotics including penicillin, vancomycin, and clindamycin. Cultures are taken to determine appropriate antibiotic according to sensitivity.

As in other maladies characterized by massive wounds or tissue destruction, hyperbaric oxygen treatment can be a valuable adjunctive therapy **(Escobar et al., 2005).**

A recent study demonstrated excellent clinical outcomes from the use of topical negative pressure, a technology that is portable and readily available. Amputation of the affected organ(s) may be necessary. Repeated explorations usually need to be done to remove additional necrotic tissue. Typically, this leaves a large open wound, which often requires skin grafting or flaps. The associated systemic inflammatory response is usually profound, and most patients will require monitoring in intensive care unit **(Martin et al., 2008).**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