

# Bacteriological Spectrum in Necrotising Fasciitis

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**Abstract:** Necrotising fasciitis is a relatively rare but seriously fatal soft tissue infection. Prompt treatment with extensive surgical debridement and antibiotics is the main principle. The wound swab culture sensitivity reports of patients (n=50) from August 2018 to February 2020 were analysed. Type I infection was dominating. The involvement of anaerobic bacteria was associated with an increase in the number of surgical revisions. In severe cases the combination of necrotic skin and soft tissue gas facilitates the correct diagnosis, which then should be followed by immediate and repeated debridement. If anaerobes are isolated then wound should be frequently reassessed. **Aim:** This study was undertaken to get an idea about the organisms involved in the pathogenesis of necrotising fasciitis that will help in starting antibiotic therapy before arrival of Culture and sensitivity report.

## 1. Introduction

Necrotising fasciitis is a rapidly progressive infection primarily involving the fascia and subcutaneous tissue. This infection which is usually induced by virulent, toxin producing bacteria can occur in any region of the body but is predominantly located in the abdominal wall, perineum and extremities [1, 2]. Giuliano and colleagues [3] classified it into two distinct groups. Type I infections are polymicrobial and involve non group A streptococci, aerobes and/or facultative anaerobes. Type II is usually caused by beta hemolytic group A streptococci alone or in combination with staphylococci. Predisposing factors of the disease are diabetes, alcohol and intravenous drug abuse as well as immunosuppression and peripheral vascular disease [4, 5]. However it has been also reported in young and previously healthy individuals.

An early sign of necrotising fasciitis is local erythema and pain out of proportion to findings of physical examination as well as fever. Skin necrosis due to thrombosis of blood vessels at the fascial level is sequel of the initiating process and is often associated with severe sepsis [6-9]. Histomorphological hallmarks are necrosis of superficial fascia with blood vessel thrombosis, severe inflammation of the dermis and subcutaneous fat as well as subcutaneous fat necrosis. Sometimes myonecrosis of underlying skeletal muscle is obvious [10-12]. Diagnostic clues include clinical findings and detection of soft tissue gas or in less obvious cases edema and stranding of fascial layers by computed tomography scanning as well as soft tissue fluid by magnetic resonance imaging [13-16]

This study was conducted to determine microbial flora involved in necrotising fasciitis so that it will help in starting empirical antibiotic therapy before culture and sensitivity report arrives.

## 2. Material and methods

The data for the study was obtained from the patients hospitalised with a provisional diagnosis of necrotising fasciitis on clinical evaluation and are admitted at JawaharLal Nehru Medical College and hospital. Patients

presenting with signs and symptoms of necrotising fasciitis admitted during August 2018 to February 2020 at JawaharLal Nehru medical college and hospital were counseled for investigations and treatment of necrotising fasciitis and its complications. 50 patients were treated in the above hospital during this period. Wound swabs of these patients were sent for culture and sensitivity.

## 3. Results

Organisms	Number of patients	Percentage
Klebsiella	13	26
Streptococcus	10	20
Staphylococcus	8	16
Polymicrobial	7	14
E. Coli	7	14
Proteus	3	6
Pseudomonas	1	2
Clostridium	1	2

Type of organism	Number of patients	Percentage
Aerobic	32	64
Anaerobic	1	2
Polymicrobial	7	14

Antibiotics	Number of Patients	Percentage
Ceftriaxone	18	36%
Cefotaxime	11	22%
Ciprofloxacin	9	18%
Amikacin	6	12%
Gentamycin	4	8%
Meropenem	2	4%

### Antibiotic Sensitivity

#### Outcome

Type of organism	No. of patients	Mortality	Percentage
Gram +ve cocci	18	1	5.55%
Gram +ve bacilli	1	1	100%
Gram -ve bacilli	24	2	8.33%
Polymicrobial	7	2	28.57%

#### 4. Discussion

In our study the most common infection was a type I-polymicrobial infection. In the present study predominant organism was Klebsiella seen in 13 cases (26%), followed by Staphylococcal aureus seen in 10 cases (20%). Polymicrobial infection was seen in 7 cases (14%). Most isolates were sensitive to ceftriaxone (36%).

#### 5. Conclusion

The most common bacterial isolate found was Klebsiella (26%) and Polymicrobial infections were seen in 7 cases (14%). As most isolates were sensitive to ceftriaxone, it can be started empirically before knowing culture and sensitivity report

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