A case of Invasive Fusobacterium Necrophorum infection: the “forgotten” disease

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Introduction

- Fusobacterium necrophorum is an anaerobic, non-motile, gram negative bacillus frequently isolated in the oral cavity, the female genital tract and the gastrointestinal tract.
- It is responsible for localised and systemic infections grouped under the term of IFND (Invasive Fusobacterium Necrophorum Disease).
- Fusobacterium necrophorum can cause infections as abscesses, tonsillitis, ear infections or arthritis, but also it causes severe septiaccemic conditions (Lemierre’s syndrome, necrobacillosis).

Case presentation

A 39 years old previously healthy female patient with no allergies, no medical history and no regular medication presented to the emergency department with a two day history of sore throat, headache, rigors, vomiting, diarrhoea.

- On arrival she was ill-looking, pale, lethargic and febrile (38.8 °C).
- Examination revealed a left **sub-mandibular swelling**, **left-sided neck tenderness** and **erythematous oropharynx**.
- She was hypotensive (82/47 mmHg) and tachycardic (132 bpm), self ventilation maintainig adequate saturation but was anuric.
- Investigation:
 - VBG: pH=7.45, lactate=3.9 mmol/l.
 - WCC=21 x 10⁹/l, neutrophils=1.98
 - CRP=385 mg/l
 - Platelests=70 x 10⁹/l
 - Urea=10.6 mmol/l, creatinine=136 μmol/l
- She received fluids (crystalloids and colloids).
- Blood samples and cultures were sent and broad spectrum IV antibiotics were commenced.
ABG: pH=7.38, HCO3=18 mmol/L, BE= -8 lactate=2 mmol/L
- Vasopressor support was commenced for refractory hypotension (71/43 mmHg) despite aggressive fluid resuscitation.
- The patient subsequently developed abdominal pain.
- Bedside US abdomen revealed a gallbladder collection for which she had an US-guided cholecystotomy.
- CT TAP showed: bibasal atelectasis, small amount of free fluid in the abdomen, hepatic cysts and multiple splenic abscesses.

She was then transferred to HDU for further management. By day 2 she showed clinical improvement and normal renal function and by day 3 she was off inotropic support. Blood cultures returned positive for Fusobacterium Necrophorum.

Lemierre’s syndrome

Lemierre’s syndrome characteristically consists of a triad:

- primary infection, most commonly tonsillitis
- septic thrombophlebitis of the internal jugular vein
- infective metastases in various organs.

The majority of human infections are caused by the sub-species Fundiliformis, but however Fusobacterium Necrophorum is the most virulent. It has been long debated if this bacteria is a normal finding in the human flora or if the infection is exogenous, but the hard evidence in the literature suggests that it is not a common inhabitant of the healthy oral cavity, female genital tract or gastrointestinal flora.

Why so virulent?

- Attributing factors include the production of various toxins, the propriety of inducing platelet aggregation and synergy with other bacteria like Streptococcus group A, specially in patients with recurrent tonsillitis.
- Host-related factors are important such as recent local trauma, surgery or recent viral infections (it has been associated with mononucleosis in 30% of cases).

In our case

- ✓ In our case the patient had computerised tomography of the neck, and no emboli or thrombus could be identified.
- ✓ An extensive infective screen was also entirely negative

Literature to date *questions* the internal jugular thrombophlebitis as an *absolute criteria* for Lemierre’s and *accepts blood cultures growth* as a surrogate to thrombosis which may be difficult to diagnose.

Today she is fully recovered, having completed a course of Clindamycin for 30 days. Regular repeat ultrasound of the abdomen monitors the splenic abscesses which are still present, 4 months after onset of disease.

Treatment relies on antibiotics, preferably Penicillin, Metronidazole and Clindamycin, but it can frequently show resistance to Erythromycin.

Prolonged duration of therapy is needed.

The role of anticoagulation is controversial and in some case reports surgical intervention was necessary.

Conclusion

There are only a few studies on the incidence of Lemierre’s syndrome that estimate it to be between 0.8 and 1.5/million/year.

Between 1950-1980 there were only a few cases reported and that is a probable consequence of *extensive use of antimicrobials* to treat throat infections, but recently the incidence of the cases is rising.

The cause for this is either better diagnosis methods, stopping empirical treatment for sore throats or restricting indications for tonsillectomy, as this disease is more common in patients retaining their tonsils.

Fusobacterium necrophorum is associated with significant morbidity and mortality; delayed diagnosis increases the mortality rate.

- ✧ Consideration should be made of Fusobacterium Necrophorum as a possible pathogen in cases of infective metastases .

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