

Fusobacterium Necrophorum Septicemia and Related Syndromes

Annual Meeting
Southern College Health Association
March 5, 2009

Patricia Geiger, M.D.
Appalachian State University

Why I asked to make this presentation

- 5 cases of *Fusobacterium necrophorum* in the past 3 years at Appalachian State University
- Forgotten disease (or never known)
- Re-emerging
- Hard to diagnose early

Fusobacterium necrophorum

- Anaerobic, non spore forming gram negative bacillus
- Normal inhabitant of mucosal surfaces of the mouth, upper respiratory tract, GI tract, and vagina
- Fusobacterium necrophorum is the most virulent of the Fusobacterium species

Pathogenesis of Fusobacterium

- Invasion of local tissues
- Septic thrombophlebitis
- Metastatic infections in lungs, brain, joints

- May be accompanied or preceded by other infections

- Not contagious to others- i.e. not a public health risk

Diseases caused by Fusobacterium

- Necrobacillosis
- Postanginal sepsis
- Lemierre syndrome
- Fusobacterium septicemia
- LALL (Lemierre and Lemierre-like)
- Local infections (defined by location)

Lemierre Syndrome

- Young adults or adolescents
- Initial pharyngitis
- Invasion of pharyngeal soft tissues
- Septic thrombophlebitis of internal jugular vein
- Spread of infection to lungs, brain, joints
- 90% Mortality (before antibiotic era)
- 10-20% Mortality (in antibiotic era)

Clinical Appearance

- Ill-appearing
- No specific, pathognomonic signs
- Rigors, fever
- Unilateral tonsil inflammation
- Swelling and tenderness over the lateral neck
- Vomiting

Diagnosis

- High index of suspicion
- Isolation by blood culture (or CSF, joint, pleural, or abscess cultures)
- 3-7 days for growth and identification
- Presumed diagnosis: CT evidence of soft tissue infection or venous thrombosis
- PCR test ?
- Neutrophilia, bandemia, thrombocytopenia

Treatment

- Up to 6 weeks of parenteral or oral antibiotics: Penicillin, clindamycin, metronidazole, others
- Beta lactamase testing
- Macrolide, quinolone, aminoglycoside resistance
- Surgical drainage or debridement
- Anticoagulants

Evidence for Re-emergence (with thanks to Dr. Robert Centor)

- >250 cases reported before antibiotic era
- Few cases reported 1950-1980
- Children's Hospital of Wisconsin-2003
- Denmark studies- 1995, 2008
- Numerous case reports
- App State and Boone, NC cases

Children's Hospital of Wisconsin

- No cases of Fusobacterium or Lemierre's before 1996
- 15 cases 1996-2002
- 11 of the 15- after 2000
- Continued incidence (verbal report)

Denmark Studies

- 1990-1995 Retrospective analysis
- ~1 case/million/year

- 1998-2001 Prospective study
- Rising incidence
- 14.4 cases/million/year for ages 15-24 yrs

- Delay of diagnosis = increased mortality

Appalachian State University Experience

- 2006-2008
- 5 cases
- 19-25 year old
- Incidence: 111 cases/million/year

Our Cases

- Healthy males
- Vomiting
- Neutrophilia and/or bandemia
- Thrombocytopenia within 24 hours
- Group C strep in two cases
- No common exposures found

Diagnostic Challenges

- Evolution from non-specific, mild illness to non-specific, critical illness
- Rapid decompensation
- Delay in confirmation
- Fragmented care of adolescents and young adults
- Fragmented medical knowledge

Why the re-emergence?

- Increase in macrolide use?
- Less empirical treatment?
- Possibility that this organism has been being treated all along without our knowledge?

Questions

Is Fusobacterium a primary pathogen as well as an opportunistic invader?

Are there intrinsic host factors which make a person susceptible?

Is there an association between group C strep and Fusobacterium?

Conclusions

- It's OK to challenge assumptions in algorithms and treatment guidelines
- CBCs can offer helpful information-
neutrophilia, bandemia, thrombocytopenia
- Blood cultures offer helpful information

Conclusions

- Recognize “the look” of a septic patient.
- Illnesses evolve
- Recognize the unusual illness
- Add Fusobacterium to the list!

Summary

- *Fusobacterium necrophorum* sepsis is a serious, life-threatening infection.
- Delay in diagnosis = increased mortality.
- Medicine is a humbling profession.