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.