Bacteroides Fragilis (OLD VERSION)

Bacteroides fragilis is a gram negative bacillus that is a common component of gut flora. It plays a key role in some of the body's essential functions, such as blood clotting, by producing vitamin K. However, the bacteria can also become pathologic, most commonly causing abdominal abscesses. This is also a gas-forming bacteria that is foul-smelling and capable of causing gas gangrene. Clindamycin and metronidazole are often used as treatment for this bacteria because of their anaerobic properties.



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Characteristics

Gram-Negative
Graham-cracker Negative-devil
This organism stains gram-negative due to relatively thin peptidoglycan layer in the cell wall.

Anaerobe
Ant-robe
This type of bacteria does not need oxygen to derive energy thus can live in locations devoid of oxygen.

Normal Colonic Flora
Normal Flowers
Bacteroides fragilis composes roughly 1% of colonic flora. As normal colonic flora, it competes with other organisms inside the colon/intestinal lumen for nutrients and food. This is beneficial because when organisms compete, it decreases the availability of nutrients for other dangerous pathogens to grow, harming our body.

Produces Vitamin K
Viking (K) King
The production of vitamin K is essential for clotting factors 2,7,9 and 10. Bacteroides fragilis is part of the gut flora which converts vitamin K to an active form. Thus loss of gut flora, including Bacteroides fragilis, can lead to a loss of active clotting factors, leaving the body prone to significant bleeding.

Produces Gas in Tissue
Fart
Bacteroides fragilis can create gas as they proliferate. This can cause tissue death and a characteristic gas gangrene.

Foul-Smelling
Smelly-face
This bacteria often creates a gas that is foul-smelling.

Signs and Symptoms

Gastrointestinal Abscess
Abscess-guy in GI system
This is a collection of bacterial proliferation which has been walled off from the body's immune system. Often filled with pus, the patient can present with systemic signs of infections and characteristic findings on abdominal CT scan.

Treatment

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Penicillin-Resistant

Tied-up Pencil-villain

These organisms are resistant to penicillin by virtue of production of beta-lactamase.

Clindamycin

Cleaning-mice

Clindamycin is an antibiotic often used for anaerobic species. It is bacteriostatic and works similar to macrolides by inhibiting ribosomal translocation.

Metronidazole

Metro-knight

Metronidazole is an antibiotic that works against anaerobic bacteria which is also anti-protozoal and amebicide. The drug is taken up and converted into a product which causes oxidative damage to the organism.

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