

Clostridium difficile

Clostridium difficile

Clostridiaceae

Clostridium



Clostridium Difficile on blood agar

Morphology	Gram-positive rods , sporulating
Relation to oxygen	strictly anaerobic
Cultivation	selective soils with cefoxitin and cycloserine, soils with vit. K and hemin (green fluorescence under UV light)
Virulence factors	thermolabile toxins: toxin A (enterotoxin, encoded chromosomally), toxin B (necrotizing cytotoxin)
Source	colonized or infected person
Transmission	alimentary tract (ingestion of spores that are excreted in the faeces)
Disease	postantibiotic colitis, pseudomembranous colitis , toxic megacolon
Diagnostics	Demonstration of toxins in stool, macroscopic picture in colitis (colonoscopy), stool cultivation on selective soils
Therapy	discontinue current ATB treatment, probiotics, nitromidazole ATB, vancomycin
MeSH ID	D016360

Template:Infobox - bakterie ***C. difficile*** is a gram-positive sporulating anaerobic rod. It is present in the intestines of 5% of healthy adults and slightly more in children and infants. With its toxins, it is able to cause disability, which can manifest as mild diarrheal disease, but also as life-threatening pseudomembranous enterocolitis.

These diseases often arise in connection with the administration of antibiotics (clindamycin , penicillins and cephalosporins), which eliminate the normal intestinal microflora. *C. difficile* is relatively resistant and in case of elimination of normal intestinal microflora, overgrowth occurs, which subsequently leads to the development of clinical symptoms.

Morphology

Bacillus type bacteria - slender rods, the size is quite variable. It easily sporulates in the presence of bile salts. The vegetative cell is easily bulged by spores that are relatively non-resistant.

Cultivation

This clostridium is named after the difficult cultivability, but today it is no longer justified when using suitable soils. *C. difficile* is cultured from faeces on soils containing the antibiotic cefoxitin, which eliminates the accompanying microflora, but *C. difficile* is resistant to it. It is also resistant to clindamycin. It requires an anaerobic atmosphere for cultivation.

Pathogenesis

Some strains release toxins (toxin A and B), which are released into the environment by the breakdown of cells. Other strains produce both toxins at the same time, but most strains do not produce any toxins. Toxins cause intestinal damage that can result in pseudomembranous enterocolitis . The formation of classical pseudomembranous enterocolitis occurs by the interaction of both toxins (toxin A damages the cells of the intestinal epithelium and reduces the efficiency of the immune system, toxin B completely destroys the damaged cells). This creates necrosis and ulcerations covered with poppies. Diarrhea, painful abdominal tension and fever appear.

- toxic megacolon
- ileus
- intestinal rupture endangering the patient's life

Diagnostics

Therapy

Restoration of the normal intestinal microflora is also essential, especially in patients treated with antibiotics. We'll do it by giving probiotics. The success of faecal transplant therapy from a healthy donor is also discussed.^[2]

Links

References

- ## Related

- Bacterial toxins

External

- Transplantace faeces ([https://www.bbc.co.uk/news/health-15113440,](https://www.bbc.co.uk/news/health-15113440))
- Léčba pomoci hovínek (<https://www.iflscience.com:443/health-and-medicine/frozen-poop-pills-make-fecal-transplants-easier-swallow/>)

References

- VOTAVA, Miroslav, et al. *Medical microbiology special*. 1st edition. Brno: Neptun, 2003. 495 pp. 150-151. ISBN 80-902896-6-5 .
- .
- . Nyč, B. Macková, V. Jindrák: Zprávy CEM (SZÚ, Praha) 2006; 15(10-11): 457

G +

coke	aerobic	<i>Micrococcus</i>	<i>Micrococcus luteus</i>
		<i>Rhodococcus</i>	<i>Rhodococcus equi</i>
	facultatively anaerobic	<i>Enterococcus</i>	<i>Enterococcus durans</i> • <i>Enterococcus faecalis</i> • <i>Enterococcus faecium</i>
		<i>Streptococcus</i>	<i>Streptococcus agalactiae</i> • <i>Streptococcus mutans</i> • <i>Streptococcus pneumoniae</i> • <i>Streptococcus pyogenes</i> • <i>Streptococcus suis</i> • <i>Oral streptococci</i>
		<i>Staphylococcus</i>	<i>Staphylococcus aureus</i> • <i>Staphylococcus epidermidis</i> • <i>Staphylococcus intermedius</i> • <i>Staphylococcus saprophyticus</i>
	anaerobic	<i>Peptococcus</i>	<i>Peptococcus niger</i>
<i>Peptostreptococcus</i>		<i>Peptostreptococcus anaerobius</i> • <i>Peptostreptococcus prevotii</i> • <i>Peptostreptococcus vaginalis</i>	

sticks	aerobic + facultative anaerobic		
		<i>Arcanobacter</i>	<i>Arcanobacterium haemolyticum</i>
		<i>Bacillus</i>	<i>Bacillus anthracis</i> • <i>Bacillus cereus</i>
		<i>Corynebacterium</i>	<i>Corynebacterium diphtheriae</i> • <i>Corynebacterium jeikeium</i> • <i>Corynebacterium ulcerans</i> • <i>Corynebacterium urealyticum</i>
		<i>Erysipelothrix</i>	<i>Erysipelothrix rhusiopathiae</i>
		<i>Listeria</i>	<i>Listeria monocytogenes</i>
		<i>Nocardia</i>	<i>Nocardia asteroides</i> • <i>Nocardia brasiliensis</i>
		<i>Rhodococcus</i>	<i>Rhodococcus equi</i>
	anaerobic		
		<i>Actinomyces</i>	<i>Actinomyces israeli</i> • <i>Actinomyces naeslundii</i>
		<i>Bifidobacterium</i>	<i>Bifidobacterium dentium</i>
		<i>Clostridium</i>	<i>Clostridium botulinum</i> • <i>Clostridium difficile</i> • <i>Clostridium novyi</i> • <i>Clostridium tetani</i> • <i>Clostridium perfringens</i> • <i>Clostridium septicum</i> • <i>Clostridium ulcerans</i>
		<i>Lactobacillus</i>	<i>Lactobacillus acidophilus</i>
		<i>Propionibacterium</i>	<i>Propionibacterium acnes</i> • <i>Propionibacterium propionicus</i>

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coke

aerobic

Acinetobacter

Acinetobacter calcoaceticus

Moraxella

Moraxella catarrhalis • *Moraxella lacunata*

Neisseria

Neisseria gonorrhoeae • *Neisseria meningitidis* • Non-pathogenic species of *Neisseria*

anaerobic

Veillonella

Veillonella alcalescens • *Veillonella parvula*

cocobacilli

aerobic

Rickettsia

Rickettsia prowazekii • *Rickettsia rickettsii* • *Rickettsia typhi*

aerobic

Alcaligentes

Alkaligentes feacalis

Bartonella

Bartonella bacilliformis • *Bartonella henselae* • *Bartonella quintana*

Bordetella

Bordetella bronchiseptica • *Bordetella parapertussis* • *Bordetella pertussis*

Brucella

Brucella abortus • *Brucella canis* • *Brucella melitensis* • *Brucella suis*

Burkholderia

Burkholderia cepacia • *Burkholderia mallei* • *Burkholderia pseudomallei*

Francisella

Francisella tularensis

Legionella

Legionella pneumophila

Kingella

Kingella denitrificans • *Kingella kingae* • *Kingella oralis*

Pseudomonas

Pseudomonas aeruginosa • *Pseudomonas fluorescens*

Stenotrophomonas

Stenotrophomonas maltophilia

sticks	facultatively anaerobic	<i>Actinobacillus</i>	<i>Actinobacillus equi</i> • <i>Actinobacillus lignieresii</i>
		<i>Aeromonas</i>	<i>Aeromonas caviae</i> • <i>Aeromonas hydrophila</i> • <i>Aeromonas sobria</i>
		<i>Afipia</i>	<i>Afipia felis</i>
		<i>Citrobacter</i>	<i>Citrobacter freundii</i> • <i>Citrobacter koseri</i>
		<i>Eikenella</i>	<i>Eikenella corrodens</i>
		<i>Enterobacter</i>	<i>Enterobacter aerogenes</i> • <i>Enterobacter cloacae</i>
		<i>Escherichia</i>	<i>Escherichia coli</i>
		<i>Haemophilus</i>	<i>Haemophilus ducreyi</i> • <i>Haemophilus haemolyticus</i> • <i>Haemophilus influenzae</i> • <i>Haemophilus parainfluenzae</i>
		<i>Klebsiella</i>	<i>Klebsiella granulomatis</i> • <i>Klebsiella oxytoca</i> • <i>Klebsiella pneumoniae</i>
		<i>Pasteurella</i>	<i>Pasteurella haemolytica</i> • <i>Pasteurella multocida</i> • <i>Pasteurella ureae</i>
<i>Plesiomonas</i>	<i>Plesiomonas shigelloides</i>		
<i>Proteus</i>	<i>Proteus mirabilis</i> • <i>Proteus vulgaris</i>		
<i>Salmonella</i>	<i>Salmonella</i> Enteritidis • <i>Salmonella</i> Typhi • <i>Salmonella</i> Paratyphi		
<i>Serratia</i>	<i>Serratia marcescens</i>		
<i>Shigella</i>	<i>Shigella boydii</i> • <i>Shigella dysenteriae</i> • <i>Shigella flexneri</i> • <i>Shigella sonnei</i>		
<i>Vibrio</i>	<i>Vibrio cholerae</i> • <i>Vibrio parahemolyticus</i>		
<i>Yersinia</i>	<i>Yersinia enterocolitica</i> • <i>Yersinia pestis</i> • <i>Yersinia pseudotuberculosis</i>		
microaerophilic		<i>Campylobacter</i>	<i>Campylobacter coli</i> • <i>Campylobacter fetus</i> • <i>Campylobacter jejuni</i>
		<i>Helicobacter</i>	<i>Helicobacter pylori</i>
anaerobic		<i>Bacteroides</i>	<i>Bacteroides fragilis</i> • <i>Bacteroides vulgatus</i>
		<i>Fusobacterium</i>	<i>Fusobacterium necrophorum</i> • <i>Fusobacterium nucleatum</i> • <i>Fusobacterium stabile</i>
		<i>Leptotricha</i>	<i>Leptotricha buccalis</i>
		<i>Mobiluncus</i>	<i>Mobiluncus curtisii</i> • <i>Mobiluncus mulieris</i>
		<i>Prevotella</i>	<i>Prevotella melaninogenica</i>
	<i>Porphyromonas</i>	<i>Porphyromonas gingivalis</i>	

resistant			
	sticks	aerobic	<i>Mycobacterium</i> <i>Atypical mycobacteria</i> • <i>Mycobacterium tuberculosis</i> • <i>Mycobacterium leprae</i>
non-stainable G +/-	spiral	strictly aerobic	<i>Leptospira</i> <i>Leptospira biflexa</i> • <i>Leptospira interrogans</i> • <i>Leptospira parva</i>
		microaerophilic	<i>Borrelia</i> <i>Borrelia burgdorferi</i> • <i>Borrelia hermsi</i> • <i>Borrelia recurrentis</i> • <i>Borrelia vincenti</i>
		strictly anaerobic	<i>Treponema</i> <i>Non-pathogenic treponems</i> • <i>Treponema carateum</i> • <i>Treponema pallidum</i> • <i>Treponema phagedenis</i> • <i>Treponema pertenue</i>
Portal: Microbiology			

Kategorie:Mikrobiologie Kategorie:Bakterie