Shigella

Shigella	
Enterobacteriaceae	
Shigella	
Shigella - Gram stain.	
Morphology	Good bar
Relation to oxygen	facultatively anaerobic
Cultivation	blood agar , lactose agar
Antigens	38 antigenic structures
Virulence factors	Shiga toxin
Source	human - an exclusively human pathogen
Transmission	alimentary, fecal-oral route
Incubation time	1-4 days
Disease	bacterial dysentery, *shigellosis*
Diagnostics	stool cultivation
Therapy	diet, antiseptics, etc. (cotrimoxazole , azithromycin , ciprofloxacin)
MeSH ID	D012760

Shigels are divided into 4 subgroups:

- A with the subspecies *S. dysenteriae* ,
- B - *S. flexneri* ,
- C - *S. boydii* ,
- D - *S. sonnei* .

They are the least chemically active of all enterobacteria.

Antigenic structure

The above 4 species can be differentiated into 38 different antigenic structures (except *S. sonnei* , which occurs in only one serotype).

Pathogenicity

- Entrance gate: oral cavity.
- Reproduction in the small intestine.
- Transition to the colon and the epithelium that destroys it. Shigel penetration into epithelial cells is encoded by a large plasmid, which has also been found in enteroinvasive *E. coli* . The plasmid encodes the structure of outer membrane proteins that allow the microorganism to bind to the microvilli and initiate microbe-induced phagocytosis .
- The virulent type of *S. dysenteriae* forms a Shiga toxin that causes paralysis in small animals. It interferes with the proteosynthesis of sensitive cells and kills them.

Epidemiology

- The most affected are children from 6 months to 10 years .
- Adults get sick most often as a result of contact with sick children.
- Epidemics are affecting facilities where hygiene standards are difficult to maintain.
- The rapid spread is caused by the high infectivity of the germs and the fact that less than 200 bacteria can cause the disease.
- The current pandemic strain - resistant to sulfonamides , tetracyclines , chloramphenicol , ampicillin and trimethoprim - has very few treatment options.

Clinical picture

- The incubation period is 1-4 days.

Shigella dysenteriae in the stool of a patient with shigeliosis

- Clinical signs of bacillary dysentery: fever, painful urge, high frequency of stools with mucus and blood.

The infection lasts 2-3 days.

Cultivation

Cultivation of *Shigella flexneri* on deoxycholate-citrate agar

Shigella flexneri - Blood agar

Cultivation of *Shigella flexneri* on Endo's soil

Laboratory diagnostics

- Cultivation of stool samples on Endo agar or DC agar . It is also possible to use chromogenic agars or XLD (xylose-lysine deoxycholate) agar , on which we detect lactose fermentation and H 2 S formation.
- Serotyping of suspect strains.

Therapy

- In the uncomplicated course, symptomatic treatment (adherence to diet and intestinal antiseptics).
- The use of ATB is unavoidable only for young children and the elderly. ATB prevents the spread to deeper layers of the mucosa.

Prevention

- Hygiene and hand washing.

Links

related articles

- Shigellosis
- intestinal infectious diseases : Cholera ■ Typhoid fever ■ Paratyphoid ■ Salmonella enteritis ■ Campylobacter enteritis ■ Cryptosporidiosis ■ Rotavirus enteritis ■ Adenovirus enteritis

References

- HORACEK, Jiri. *Basics of medical microbiology.* 1st edition. Prague: Karolinum Publishing House, 2000. vol. 1. ISBN 80-246-0006-4. .
- GOERING, Richard V and Hazel M DOCKRELL. *Mims' medical microbiology.* 5th edition. Prague: Triton, 2016. 568 pp. ISBN 978-80-7387-928-0 .

Reference

1. BENEŠ, Jiří. *Infectious medicine.* 1st edition edition. Galén, 2009. 651 pp. 234–235. ISBN 978-80-7262-644-1 .
2. ↑Jump up to:a b c GOERING, Richard V and Hazel M DOCKRELL. *Mims' medical microbiology.* 5th edition. Prague: Triton, 2016. 568 pp. 283. ISBN 978-80-7387-928-0 .

Bacteria	

G +

coke

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

sticks

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

Go

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

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

Portal: Microbiology