Clinical Aspects of Liver Diseases

24 Bacterial infections and the liver

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A number of bacterial infections may affect the liver to varying degrees of intensity. The frequently observed liver involvement is attributed to a number of **causes:** (*1.*) size of this visceral parenchymatous organ, (*2.*) multiplicity and activity of the hepatic RES as a filtering system, (*3.*) double (portal and arterial) blood supply with transport of bacteria or their toxins, and (*4.*) lymphogenous spread of pathogenic organisms.

1 Pathogenesis

The pathogenesis of liver involvement in bacterial infections often remains unresolved. In this respect, **four pathomechanisms,** either alone or in combination, are assumed to play a role. (s. tab. 24.1)

1. **Direct effects of pathogens**
   - direct haematogenic spread
   - direct lymphogenous spread
2. **Indirect effects of pathogens**
   - toxins
   - endotoxins
3. **Reactions due to the basic disease**
   - hypoxaemia
   - fever, exsiccosis, acidosis
   - electrolyte imbalance, *etc.*
4. **Therapy-induced liver damage**

Tab. 24.1: Pathomechanisms of liver involvement in bacterial diseases

1. **Residual previous liver damage**
2. **Coexistent previous liver damage**

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1. **Parenchymal changes**
   - cytoplasmic lesions
   - cell necroses
   - nuclear changes
2. **Mesenchymal reactions**
   - portal inflammation
   - endothelial cell reaction
   - bile duct proliferation
   - fibrosis

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1. Non-specific reactive hepatitis
2. Retothelial nodules
3. Bacterial peliosis hepatis
4. Granulomas
5. Giant-cell hepatitis
6. Abscess formation

Tab. 24.2: Morphological reaction types in liver involvement following bacterial infections

2 Types of lesion

Liver involvement may occur in both extrahepatically localized and generalized bacterial infections. Various **morphological reactions** appear depending on (*1.*) severity of infection, (*2.*) type of pathogen, (*3.*) respective morphological reaction of the liver, and (*4.*) possible previous liver damage – similar reactions also appear in viral hepatitis. Combined with the potential coexistence of scarred/fibrotic and chronic inflammatory liver changes, these additional acute infections may lead to morphological pictures that are difficult to interpret. The diversity of the morphological reaction types may also be influenced by individual factors. (s. tab. 24.2)

3 Bacterial pathogens

The principal pathogenic agents causing liver damage are pyogenic cocci, gonococci, enteric bacteria, myco-

1. **Pyogenic cocci**				
– Pneumococci				
– Staphylococci				
– Streptococci				
2. **Neisseria gonorrhoea**		D		
3. **Enterobacteriaceae**				
– Escherichia coli	(S	D	E)	
– Shigella species	S	D	E	
– Salmonella species	S	D	E	
– Yersinia enterocolitica	(S	D	E)	
– Vibrio cholerae	S	D	E	
4. **Mycobacteria**				
– M. tuberculosis		D	E	
– M. scrofulaceum		D	E	
– M. leprae	S	D	E	
5. **Spirochaetes**				
– Leptospira species		D	E	
– Treponema pallidum	P	D		
– Borrelia species	S	D	E	
6. **Listeriae**	P	D	E	
7. **Brucella species**		D	E	
8. **Rickettsia species**	(S)	D	E	(R. prow.)
9. **Francisella tularensis**	S	D	E	
10. **Chlamydia psittaci**	S	D	E	
11. **Clostridium species**	(S)	D	E	(C. bot.)
12. **Tropheryma whippeli**				
13. **Campylobacter jejuni**	(S	D	E)	
14. **Rochalimaea species**				
15. **Actinomyces israelii**				

Tab. 24.3: Major bacterial organisms causing liver damage. • In Germany, **obligation for notification** is given in cases of suspicion (S), disease (D), exitus (E), or perinatal infection (P). This can, however, vary from country to country. *If in doubt:* contact the Public Health Department!