Article

Antimicrobial treatment of infrequent bacterial species isolated in children

Traitement des infections dues à des bactéries plus rarement rencontrées chez l'enfant

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Summary

This section summarizes the empirical antimicrobial treatment according to the less frequent bacterial species responsible for infection whether community-acquired or nosocomial. It specifies their role in diseases and the recommended antibiotics, taking into account their natural and most common acquired resistance and the pharmacokinetic-pharmacodynamic parameters.

The advice of an infectious disease specialist or bacteriologist is recommended.

Résumé

Ce chapitre résume l'antibiothérapie probabiliste préconisée en fonction des bactéries responsables des pathologies bactériennes rarement isolées qu'elles soient communautaires ou nosocomiales. Il précise les pathologies principales dont la bactérie est responsable ainsi que les antibiotiques préférentiels pour les traiter. Ces recommandations prennent en compte les résistances naturelles ou acquises les plus fréquentes et les paramètres pharmacocinétiques-pharmacodynamiques des antibiotiques utilisés.

L'avis spécialisé d'un infectiologue ou d'un bactériologiste est recommandé.

The choice of antibiotics is generally empiric, before the results of cultures of bacteriological samples and of the antibiotic susceptibility results. Mass spectrometry shortens the time to identification of the bacterial species, but today does not allow determining the susceptibility to antibiotics. Polymerase chain reaction assays (PCR) make it possible to identify bacterial species more quickly and is more sensitive for bacterial species for which culture is difficult or when antibiotic treatment is started. Furthermore, sometimes it could help to identify some mechanisms of resistance, but does not provide a complete antibiotic susceptibility.

Empiric antibiotic treatment attempts to target the most frequently responsible bacteria in community-acquired or nosocomial bacterial infections:

- *Neisseria meningitidis* or pneumococcus for childhood meningitis;
- Pneumococcus, *Haemophilus influenzae* for respiratory infections;
- Group A *Streptococcus* for strep throat, complicated ENT infections, and skin infections;
- *Staphylococcus aureus* for skin and bone infections and a few serious respiratory infections;
- *Escherichia coli* for urinary infections;

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- *E. coli*, *Listeria* and Group B *Streptococcus* for neonatal infections;
- *Shigella, Salmonella*, and *Campylobacter* for digestive tract infections.

The preferred antibiotic treatments for each of these bacterial species are indicated in the chapters corresponding to the various diseases.

Some bacterial species are more rarely implicated of pediatric infectious diseases.

Table 1 lists these bacterial species in alphabetical order. It details their role in pathology as well as the recommended antibiotics, taking into account the natural or acquired resistance of the bacterial species and the pharmacokinetic and pharmacodynamic parameters of the antibiotics.

Treatment of most of these bacteria requires specialized advices (consultation with an infectious disease specialist or bacteriologist), in particular with high-risk diseases (immunodepression, presence of material, etc.), and the differential diagnosis between infection and colonization can be difficult.

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Table 1. Recommended treatment of infrequent bacterial species isolated in children

Bacteria	Diseases	Recommended regimen	Alternatives	Comments
Acinetobacter spp.	– Nosocomial infections – Septicemia – Urinary tract infections	**Imipenem** or **Meropenem** + **Amikacin**	**Colimycin** or **Tigecyclin** or **Rifampicin** or **Sulbactam** (depending on antibiotic susceptibility results)	Its pathogenic role should only be recognized after critical analysis of the situation (frequent contaminant). Considered pathogenic only when isolated from a normally sterile site. Bi-therapy required. Often multiresistant: IRAB (imipenem-resistant *Acinetobacter baumannii*). Imipenem has better PK/PD than **meropenem**; however, **meropenem** shows better meningeal diffusion and tolerance in newborn and in renal failure patient. **Colimycin** can only be prescribed after checking MIC
Actinomyces spp.	– Septicemia – Stomatologic – Thoracic – Abdominal – Pelvic	**Penicillin G** or **Amoxicillin**	**Ceftriaxone** or **Macrolides**	Its pathogenic role should only be recognized after critical analysis of the situation (frequent contaminant). Considered pathogenic only when isolated from a normally sterile site. Prolonged treatment duration: 4–12 months is necessary.
Aeromonas hydrophilia	– Diarrhea – Septicemia – Cellulitis – Meningitis	**Antibiotic treatment not required for common diarrhea** **Cotrimoxazole** (for severe forms)	**Aminoglycosides** or **Chloramphenicol** or **Cefotaxime** or **Ceftriaxone**	
Aggregatibacter (formerly Haemophilus) aphrophilus	– Septicemia – Endocarditis – Abscess, osteitis	**Amoxicillin + clavulanate** or **Cefotaxime** if cerebral infection	**Cefotaxime**	