Staphylococcus aureus

- Activation of BmToll9-1 in Silkworm (Bombyx mori) Larval Midgut by Escherichia coli and Regulation of Growth
- Exploring the Bioactive Secondary Metabolites of Two Argentine Trichoderma afroharzianum Strains
- Hydrazine Derivative-Based Carbon Dots for Potent Antibacterial Activity Against Multidrug-Resistant Bacterial
- Functional Properties and Safety Considerations of Zinc Oxide Nanoparticles Under Varying Conditions
- The Effects of Low Concentrations of Nisin on Biofilm Formation by Staphylococcus aureus Isolated from Dairy Cattle
- The Rise, Fall, and Rethink of (Fluoro)quinolones: A Quick Rundown
- New Bioactive Polyketides from the Mangrove-Derived Fungus Daldinia eschscholzii HJX1P2
- Dual Antibiotic-Infused Liposomes to Control Methicillin-Resistant Staphylococcus aureus

Staphylococcus aureus is a Gram-positive bacteria that is a member of the Firmicutes, and is frequently found in the human respiratory tract and on the skin. It is positive for catalase and nitrate reduction. Although S. aureus is not always pathogenic, it is a common cause of skin infections (e.g. boils), respiratory disease (e.g. sinusitis), and food poisoning. Disease-associated strains often promote infections by producing potent protein toxins, and expressing cell-surface proteins that bind and inactivate antibodies.

Classification

see Methicillin resistant Staphylococcus aureus.

see Methicillin sensitive Staphylococcus aureus.

Epidemiology

The epidemiology of invasive of S. aureus infections continues to evolve with Methicillin sensitive Staphylococcus aureus (MSSA) accounting for most of the infections in the series of Vallejo et al.

The majority of cases were associated with neurosurgical procedures; however, hematogenous S. aureus meningitis and spinal epidural abscess (SEA) occurred as community-acquired infections in patients without predisposing factors. Patients with MRSA CNS infections had a favorable response to vancomycin, but the beneficial effect of combination therapy or targeting vancomycin trough concentrations of 15-20 µg/mL remains unclear [1)].

Prevention

Neurosurgical procedures and immunocompromisation are major risk factors for Staphylococcus

aureus central nervous system infections. Hand hygiene, surveillance nasal swabs and perioperative prophylaxis are crucial points for effective SA infections prevention. In case of SA-CNS infections, pending microbiological results, anti-methicillin-resistant SA (MRSA) antibiotic, with good CNS penetration, should be included, with prompt de-escalation as soon as MRSA is ruled out. Consultation with an expert in antimicrobial therapy is recommended as well as prompt source control when feasible [2].

Treatment

Staphylococcus aureus treatment.

Complications

Implant failure is a severe and frequent adverse event in all areas of neurosurgery. It often involves infection with biofilm formation, accompanied by inflammation of surrounding tissue, including the brain, and bone loss. The most common bacteria involved are Staphylococcus aureus.

see Staphylococcus aureus brain abscess.

see Hem coagulase-induced thrombotic events.

Outcome

Among central nervous system infections (e.g., meningitis, brain abscess, ventriculitis, transverse myelitis), those caused by Staphylococcus aureus (SA) are particularly challenging both in management and treatment, with poor clinical outcomes and long hospital stay [3].

Case series

Staphylococcus Aureus Case Series.

[1] Vallejo JG, Cain AN, Mason EO, Kaplan SL, Hultén KG. Staphylococcus aureus Central Nervous System Infections in Children. Pediatr Infect Dis J. 2017 Oct;36(10):947-951. doi: 10.1097/INF.0000000000001603. PubMed PMID: 28399057.

[2], [3] Antonello RM, Riccardi N. How we deal with Staphylococcus aureus (MSSA, MRSA) central nervous system infections. Front Biosci (Schol Ed). 2022 Jan 12;14(1):1. doi: 10.31083/j.fbs1401001. PMID: 35320912.