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 **Infective Endocarditis**

Infective endocarditis (IE) is defined as a microbial infection of the endothelial surface of the heart or heart valves that most often occurs in proximity to congenital or acquired cardiac defects. Its intracardiac effects include severe valvular insufficiency, which may lead to intractable congestive heart failure and myocardial abscesses, therefore, emphasis has long been directed toward its prevention. Although bacteria most often cause these diseases, fungi and other microorganisms may also cause infection; thus, the term infective endocarditis (IE) is used to reflect this multimicrobial origin.

**Predisposing conditions** attributed to IE include:

* Mitral valve prolapse
* Aortic valve disease
* Congenital heart disease
* Prosthetic valve

**Etiology**

1. Streptococci are the most common cause of IE 30%-65%, of which streptococci viridans (alpha-hemolytic streptococci), which are normal constituents of the oral flora and gastrointestinal tract.
2. Staphylococci are the cause of at least 30%-40% of cases of IE; mostly coagulase-positive Staphylococcus
3. In some recent studies, S. aureus has emerged as the most common cause of IE and rates of viridans streptococci have decreased.
4. Other microbial agents that less commonly cause IE such as the HACEK group (Haemophilus, Actinobacillus, Cardiobacterium, Eikenella, Kingella), Pseudomonas aeruginosa, Corynebacterium, Bacteroides fragilis, and fungi.

**Signs and symptoms**

The clinical presentation may be varied; the interval between the presumed initiating bacteremia and the onset of symptoms of IE is estimated to be less than 2 weeks in more than 80% of patients.

􀀹 Fever (most common).

􀀹 Heart murmur.

􀀹 Petechiae of the palpebral conjunctiva, the buccal and palatal mucosa, and extremities.

􀀹 Osler's nodes (small, tender, subcutaneous nodules that develop in the pulp of the digits

􀀹 small, erythematous or hemorrhagic, macular Non tender lesions on the palms and soles).

􀀹 Splinter hemorrhages in the nail beds

􀀹 Roth spots (oval retinal hemorrhages with pale centers

􀀹 Splenomegaly

􀀹 Clubbing of the digits.

􀀹 Positive blood cultures in most cases.

**Diagnosis**

􀂾 Positive blood cultures.

􀂾 Evidence of endocardial involvement (e.g., positive echocardiography, presence of new valvular regurgitation.

**Dental management**

* The dentist should identify from history taking those patients with cardiac conditions that increase risk for IE.
* The basic assumption is that IE is most often due to a bacteremia

 that results from an invasive dental procedure, and that through the

 administration of antibiotics prior to those procedures, IE could be

 prevented.

* The following procedures and events **do not** need prophylaxis:

routine anesthetic injections through noninfected tissue, restorative dentistry, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, suture removal, fluoride treatment and bleeding from trauma to the lips or oral mucosa.

* Preoperative use of 0.2% Chlohexidine mouth washes is Advisable
* In case of prolonged dental procedures (longer than 6 hours) it is advisable to administer an additional prophylactic dose (same dose).

**Antibiotic Prophylaxis Regimens**

All doses shown below are administered once as a single dose 30-60 min before the procedure.

*Standard general prophylaxis*

Amoxicillin

Adult dose: 2 g PO

Pediatric dose: 50 mg/kg PO; not to exceed 2 g/dose

*Unable to take oral medication*

Ampicillin

Adult dose: 2 g IV/IM

Pediatric dose: 50 mg/kg IV/IM; not to exceed 2 g/dose

*Allergic to penicillin*

Clindamycin

Adult dose: 600 mg PO

Pediatric dose: 20 mg/kg PO; not to exceed 600 mg/dose

*Allergic to penicillin*

Cephalexin or other first- or second-generation oral cephalosporin in equivalent dose (do not use cephalosporins in patients with a history of

immediate-type hypersensitivity penicillin allergy, such as urticaria, angioedema, anaphylaxis)

Adult dose: 2 g PO

Pediatric dose: 50 mg/kg PO; not to exceed 2 g/dose

Azithromycin or clarithromycin

Adult dose: 500 mg PO

Pediatric dose: 15 mg/kg PO; not to exceed 500 mg/dose

*Allergic to penicillin and unable to take oral medication*

Clindamycin

Adult dose: 600 mg IV

Pediatric dose: 20 mg/kg IV; not to exceed 600 mg/dose

Cefazolin or ceftriaxone (do not use cephalosporins in patients with a history of immediate-type hypersensitivity penicillin allergy, such as

urticaria, angioedema, anaphylaxis)

Adult dose: 1 g IV/IM

Pediatric dose: 50 mg/kg IV/IM; not to exceed 1 g/dose

**Rheumatic fever and rheumatic heart disease**

Rheumatic fever is an autoimmune inflammatory process that develops

after pharyngeal infection with group A beta-hemolytic streptococci (streptococcus pyogenes). It predominantly affects children between 5-

15 years. Rheumatic fever may occasionally be followed by chronic rheumatic carditis with permanent cardiac valvular damage that appears to be immunologically mediated tissue damage, which may lead to fibrosis and distortion of the cardiac valves (chronic rheumatic heart disease).

**Dental management**

􀂾 Acute rheumatic fever patients are exceedingly unlikely to be seen during an attack but emergency dental treatment may be necessary.

􀂾 Patients with history of rheumatic fever but without cardiac involvement are treated as a normal person.

􀂾 Most patients with chronic rheumatic heart diseases are anticoagulated and they should be managed after determining their prothrombin time and INR and the treatment can be done under local anesthesia with vasoconstrictor in consultation with the physician. Conscious sedation with nitrous oxide may be given if cardiac function is good and with the approval of the physician.

􀂾 Indications for prophylactic antibiotics are only for the high risk patients mentioned in the dental management of IE.