Adjunctive Periodontal Therapy

Examples of Chemical Agents used in Periodontal Patients

- Therapeutic mouth rinses
- Therapeutic dentifrices
- Subgingival irrigation
- Controlled-release delivery devices
- Systemic tablets and capsules

Adjunctive Therapy

- Select products according to patient needs
- Explain expectations & procedures
- Emphasis on homecare

Microbial Reservoirs for Periodontal Pathogens

- Microbial reservoir is a secure place that allows periodontal pathogens to
  - Live undisturbed during routine periodontal therapy
  - Subsequently repopulate periodontal pockets quickly

  • At this point, there is **NO chemical agent that can control periodontitis**

Microbial Reservoirs

**Bacteria may live:**

- In furcation areas
- On residual calculus deposits not removed during therapy
- Within connective tissue
- In dentinal tubules
- Protected by irregularities in tooth surfaces
- Protected by bulky restoration margins

Resistance of Biofilm to Chemical Agents

**Slime Layer:**

- Plaque biofilm is covered by extracellular slime layer
- Acts as natural barrier to protect organized bacterial colonies living in biofilm
- Prevents chemicals from contacting & killing bacteria biofilm
- Limits extent to which chemical agents can be expected to control
Antimicrobial Treatments:

- Systemic- administered orally or injection
- Local- delivered at site; irrigation or controlled release

Systemic Drugs:

- Penicillin and amoxicillin
- Tetracyclines
- Erythromycin
- Metronidazole
- Clindamycin
- Combination of Metronidazole/Penicillin

Systemic Antibiotics:

- Conjunction with S/RP
- Localized or aggressive periodontitis & other unresponsive forms of PD (acute infections; perio abscesses, pericoronitis, NUG or NUP)
- Immunosuppressed patients
- Microbiologic analysis recommended

Routine Use of Systemic Antibiotics for Plaque-Induced Gingivitis and Chronic Periodontitis is NOT Recommended

Disadvantages of Systemic Drugs:

- Drug sensitivities; side effects
- Development of resistant strains
- Local concentration diluted when it reaches pocket
- Superimposed infections
- Poor compliance
- Overuse
- Gastrointestinal problems
- Nausea
- Diarrhea

What are some of the advantages? Educate patients why systemic drugs are not recommended for treatment of chronic periodontal disease!

Tetracyclines:

- Concentrated in gingival sulcus & crevicular fluids
- Targets AA
- Helps control spread of disease
- Inhibit action of collagenase (enzyme responsible for breakdown of periodontium)
- Can interfere w/birth control pills
- More effective than S/RP alone or systemic alone

Local Delivery/Controlled Release:

Placing chemical agent into mouth or periodontal pocket

- Perio-Chip- Chlorhexidine gluconate- (CHX)
- Atridox- (Doxycycline hyclate)
- Arestin- (Minocycline HCl)
- Dentocycin- (Minocycline gel)
- Elyzol- (Metronidazole benzoate gel)

**See study aid on module**
Uses of Controlled Release/Locally Delivered:

- Initial therapy to enhance instrumentation
- Sites non-responsive to treatment
- Recurrent disease
- Preparation for periodontal surgery
- Peri-Implantitis (failing implants)
- Periodontal abscesses

Advantages of Controlled Release:

- High concentration at site & reaches depth of pocket
- Used along with SRP results in reduction probing depths & increase in attachment levels
- Provides medication over time
- Remains in pocket & slowly released
- Doesn’t rely on patient compliance (patients don’t have to remember to take meds)
- Side effects reduced because drug is delivered to site

Disadvantages:

- Studies do not conclusively verify benefits
- Failure of instrument to reach deep pockets
- Difficulty to use
- Professional removal required sometimes
- Requires follow-up visits

DH Follow-up:

- Reevaluate in 4-6 weeks
- Include: oral hygiene, bleeding, probing, CAL, calculus & plaque, health of tissues
- Evaluate for further treatment/referral

Subgingival Irrigation:

- Disruption & dilution of bacteria
- Flushing & lavage of pockets
- Uses: hand held syringe, pulse-jet or ultrasonic tips

See study guide

Professional Sub-gingival Irrigation:

- Blunt-tipped cannula attached to a handheld syringe
- Ultrasonic unit equipped with fluid reservoir
- Air-driven handpiece connects to dental unit
- Disruption & dilution of biofilm from within pockets
Irrigation Solutions:

- Water
- Chlorhexidine gluconate
- Diluted providone-iodine and water
- Diluted stannous fluoride
- Tetracycline
- Listerine
- Saline solution

Benefits of Irrigation:

- In-office subgingival irrigation with antimicrobial agent only limited or no beneficial effects over instrumentation alone
- No long-lasting substantivity of antimicrobial agent due to continuous flow of gingival crevicular fluid in pocket
- Antimicrobial agent, (CHX)- must be retained in pocket & slowly released over time for beneficial effect

Topical Antimicrobial Agents:

- Chlorhexidine
- Stannous Fluoride
- Hydrogen Peroxide
- Phenolic Compounds
- Providone Iodine
- Sanguinarine
- Sodium Benzoate
- Quaternary Compounds
- Triclosan

Mouth Rinses

- Therapeutic Mouth Rinses
  - Rinses that decrease dental plaque enough to also decrease severity of gingivitis
- Cosmetic Mouth Rinses
  - Used to cover up or mask odors of halitosis
  - DO NOT control oral diseases such as gingivitis

Characteristics of an Ideal Mouth Rinse

- Efficacy—inhbits or kills periodontal pathogens
- Stability—stable at room temperature & has reasonable shelf life
- Substantivity—retained in oral cavity & released slowly over several hours with continued effect
- Safety—does not produce any harmful effects on local tissues or systemically

Chlorhexidine Gluconate (CHX):

- 0.12% concentration in US
- High substantivity- 24 hrs
- Ruptures cell membrane
- Kills gram positive & negative bacteria
- Bactericidal antiseptic
- ADA approved as an antimicrobial- anti-gingivitis agent
- Reduces severity of gingivitis by 50% when used correctly
- Prescription only

What are the disadvantages
Patient Instructions?
What groups of people would benefit from CHX?
Phenolic Compounds
Essential Oils (EO):
• Alcohol content 26%; pH 5
• Bacteriostatic
• Up to 12 hours of substantivity
• Disrupts bacterial cell wall
• ADA/FDA approved as anti-gingivitis & antimiicrobial
• Reduces gingivitis by 35%
• Combination of: Eucalyptol, Menthol, Methyl salicylate, Thymol

What type of bacterial is it most effective on?
What are patient instructions?
What are the side effects?

Stannous Fluoride:
• .063- rinses; 0.4% - gels; 0.45% toothpastes
• Antimicrobial
• Bactericidal
• Low-moderate substantivity
• Reduces gingival inflammation
• ADA approved: reduction in plaque, gingivitis, caries, calculus, & sensitivity

Examples: Gel-Kam, Perio-Med, Gingi-Med, Crest Pro-Health
What are some disadvantages?

Quaternary Ammonium Compounds:
• Low substantivity
• Some reduction in plaque & gingivitis; not conclusive
• Side effects: staining, calculus formation, & burning sensation
• Scope, Cepacol, Crest Pro-Health Rinse, Viadent (currently used)

Other Products

Sodium Benzoate
• Detergent; not an anti-plaque/anti-gingivitis agent
• No beneficial effects
• No side effects or adverse reactions

Triclosan
• Broad spectrum antiseptic
• Reduces supragingival calculus and gingival inflammation
• ADA approved for reduction in plaque & gingivitis

Other Products