

# Chiropractic Care for Otitis Media: Clinical Rationale, State of Research and Treatment Protocols

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# Overview

- Facts about otitis media
- Diagnosis of otitis media
- Current medical management
- Rationale for chiropractic care for otitis
- Research regarding manipulative therapy for otitis
- Treatment tools and protocols for the chiropractor



# Facts about Otitis Media (OM)

- Societal Costs
  - \$5.3 billion estimated national direct costs annually
  - \$8 billion estimated when indirect expenses are taken into account
- Incidence of OM
  - 60% will experience OM in 1st year
  - 17% will have recurrence that year
  - 250% increase in incidence of OM from 1975-1990
- Risk Factors for developing OM
  - Large daycare, exposure to cigarette smoke, pacifier use beyond 10 months, formula fed
- Risks of complications of OM
  - Very rare; 1 in 10,000 experience infectious complication such as mastoiditis or meningitis leading to serious illness or death

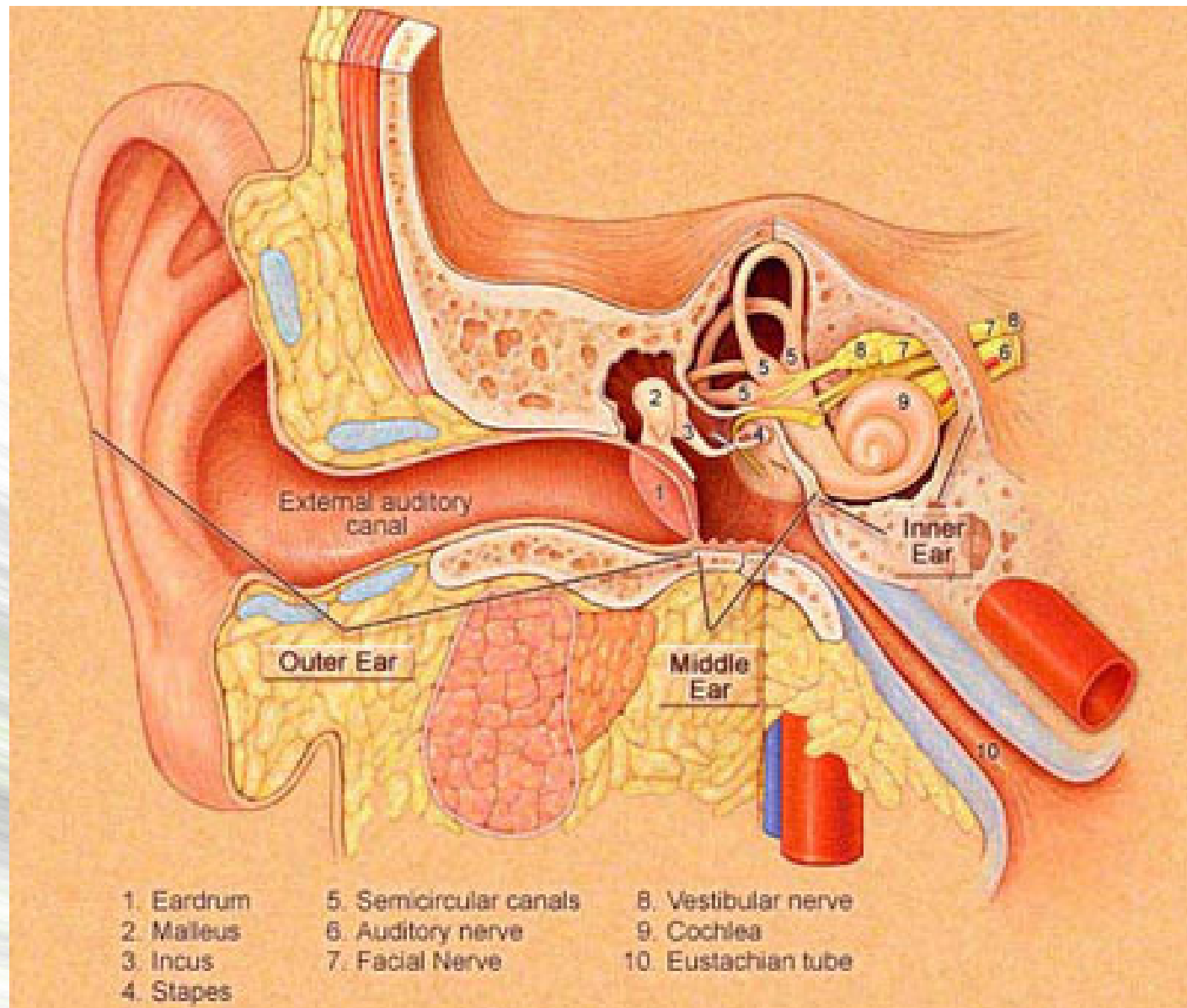




# Diagnosis of OM

- To diagnose acute otitis media (AOM):
  - Acute onset, painful, usually other signs of illness
  - Tympanic Membrane (TM) evaluation:
    - Bulging TM, loss of landmarks
    - Opaque TM
    - Erythematous TM
    - Possible visible bubbles or fluid line behind TM
    - Immobile TM on pneumatic otoscopic examination
- Important to ddx from otitis media with effusion (OME)
  - Retraction or normal position of TM, may or may not be painful, fluid behind TM





# Current Medical Management of Otitis Media

- Antibiotics
- Myringotomy with tympanostomy tube insertion
- Watchful waiting





# Current Medical Management of Otitis Media - Antibiotics

- Traditional medical answer for AOM
- Reasons to avoid antibiotics
  - Many cases of AOM are not bacterial
  - Overuse leads to antibiotic resistant bacteria
  - Studies have found antibiotics to be ineffective
    - Del Mar et al found that 17 children must be treated with antibiotics to prevent one child from experiencing some pain 2 days after presentation to pediatrician.

Del Mar C, Glasziou P, Hayern M. Are antibiotics indicated as initial treatment for children with acute otitis media? A meta-analysis. *British Medical Journal* 1997; 314(7093): 1526-1529.

- Use of antibiotics may involve serious side effects
  - Wickens et al found that children were 4x as likely to develop asthma if antibiotics were used in the first year.

Wickens K, Pearce N, Crane J, Beasley R. Antibiotic use in early childhood and the development of asthma. *Clinical and Experimental Allergy* 1999; 29(6): 766-771.



# Current Medical Management of Otitis Media - Tube Insertion

- Used for chronic cases of OM
  - Typically recommend myringotomy with tympanostomy tube insertion if greater than 3 months of effusion with  $> 20$  dB hearing loss
- Ineffective: in children younger than 3 years, tube insertion did not improve developmental outcomes
- Paradise JL, Feldman HM, Campbell TF, et al. Effect of early or delayed insertion of tympanostomy tubes for persistent otitis media on developmental outcomes at age of three years.  
*New England Journal of Medicine* 2001; 344(16): 1179-1187.
- Potential complications include risks of anesthesia, TM scarring and hearing loss





# Current Medical Management of Otitis Media - Watchful Waiting

- Also called “wait and see” (WAS)
- The latest approach to AOM
- Recommended by the American Academy of Pediatrics and the Academy of Family Physicians
- Limit treatment to symptomatic relief in first 48-72 hours of onset of AOM
- Spiro: RCT of 283 children found no difference in fever, otalgia or further visits to medical provider between WAS group and standard prescription group

Spiro DM, Tay K, Arnold DH, et al. Wait-and-see prescription for the treatment of acute otitis media: a randomized controlled trial. *Journal of the American Medical Association* 2006; 296(10): 1235-1241.



# Rationale for Chiropractic Care for Otitis Media

- Fluid in the middle ear cavity drains through the Eustachian tube (ET)
- ET diameter is controlled by the surrounding tensor veli palatini muscle (TVP)
  - innervated by the trigeminal nerve (CN V)
- Secondary regulation by the levator veli palatini muscle (LVP) and the salpingopharyngeus muscle (SP)
  - both innervated by the vagus nerve (CN X)
- Irritation of the superior cervical sympathetic ganglion secondary to a subluxation can affect both CN V and CN X, leading to increased tone of these muscles with resultant constriction or closure of the ET



# Rationale for Chiropractic Care for Otitis Media

- Closure of the ET creates fluid buildup in the middle ear
  - Effusion can be painful, despite lack of infection
- Eventually, fluid will be come infected with pathogen (viral or bacterial)
- Antibiotics often used at this point, but since the underlying cause of effusion has not been addressed, fluid often remains and recurrent infections occur.
  - This typically leads to repeated courses of antibiotics
- Spinal and cranial adjustments remove the subluxation, which relieves the ganglionic irritation which releases the TVP spasm which allows fluid to once again drain through ET





# How a Subluxation Can Lead to Otitis Media

SUBLUXATION



MYOSPASM IN TENSOR VELI PALATINI MUSCLE



OCCLUSION OF EUSTACHIAN TUBE



POOLING OF FLUID IN MIDDLE EAR



BACTERIAL/VIRAL GROWTH AND INFECTION



REPEATED USE  
OF ANTIBIOTICS



ANTIBIOTICS TO KILL  
BACTERIA



PATHOGEN  
REGROWTH



# Research Regarding Manipulative Therapy for Otitis Media

- RCT's, case series and case studies for over 450 patients support theory that chiropractic care can help children with OM
- Most cases resolve within 10 days, fewer than 5 adjustments
- Many require only 1-2 treatments
- Mills study: RCT of 57 children
  - Those who received manipulative therapy (osteopathic) had fewer episodes of AOM, fewer surgical procedures and had higher rates of normal tympanograms than those receiving standard pediatric care.

Mills MV, Henley CE, Barnes LLB, Carreiro JE, Degenhardt BF. The use of osteopathic manipulative treatment as adjuvant therapy in children with recurrent acute otitis media. Archives of Pediatrics and Adolescent Medicine 2003; 157(9): 861-866.



# Research Regarding Manipulative Therapy for Otitis Media

- Degenhardt BF, Kuchera ML. Osteopathic evaluation and manipulative treatment in reducing the morbidity of otitis media: a pilot study. Journal American Osteopathic Assn 2006;106(6):327-334.
- Fallon JM. The role of the chiropractic adjustment in the care and treatment of 332 children with otitis media. Journal of Clinical Chiropractic Pediatrics 1997; 2(2): 167-183.
- Froehle RM. Ear infection: A retrospective study examining improvement from chiropractic care and analyzing for influencing factors. Journal of Manipulative and Physiological Therapeutics 1996; 19(3): 169-177.
- Fysh PN. Chronic recurrent otitis media: Case series of five patients with recommendations for case management. Journal of Clinical Chiropractic Pediatrics 1996; 1: 66-78.
- Sawyer CE, Evans RL, Boline PD, Branson R, Spicer A. A feasibility study of chiropractic spinal manipulation versus sham spinal manipulation for chronic otitis media with effusion in children. Journal of Manipulative and Physiological Therapeutics 1999; 22(5): 292-298.





# Treatment Tools and Protocols: Manual Therapies

- Spinal adjustments (especially the occiput)
- Craniosacral therapy or other form of cranial work
- Soft tissue modalities
  - Lymphatic drainage
  - Endonasal procedure (clears os of ET)



# Treatment Tools and Protocols: Supplements

- Herbal ear drops
  - to treat acute infections
- Immune support:
  - Echinacea for bacterial infections
  - Sambucus (elderberry) for viral infections
  - Homeopathic immune tincture for babies
- GI Support: probiotics and prebiotics
  - Critical for children who have been on antibiotics
- Mucus drainage: N-Acetyl Cysteine
- Foundational Nutrition
  - Multivitamin, vitamin C, essential fatty acids daily



# Treatment Tools and Protocols: Parent Education

- Reassure parents that most children with OM will recover without antibiotics
  - Spontaneous resolution rate 81%
    - Therefore, less than 20% will need antibiotics
    - Compare that to 93% resolution rate with antibiotics  
(So antibiotics are only helping 12%!)
  - Chiropractic care can significantly increase rate of resolution without antibiotics
- Educate parents about role of fever in illness
- Educate parents about ineffectiveness of OTC cold and cough remedies for children
  - Some have even been shown to prolong infection
- Home remedies
  - Humidifier, warm compress over ear





# Treatment Tools and Protocols: Address Underlying Causes

- Gastrointestinal Dysbiosis
  - Aka “Leaky Gut Syndrome”
  - Common sequela to antibiotic therapy
  - Can lead to food allergies and chronic inflammation beyond GI tract
  - Diagnosis via stool testing
- Food Intolerances/Allergies
- Environmental allergies and Biochemical stressors
  - Cigarette smoke, pets, household cleaning agents, laundry products, etc.
  - All can lead to chronic adenoid inflammation which can block os of ET



# Treatment Tools and Protocols: Nutritional Deficiencies

- Common due to Standard American Diet (SAD)
- Increase unprocessed, fresh, organic foods
  - Fruits, vegetables, whole grains
- Decrease simple carbohydrates, sodas, juices, food colorings, preservatives, glutamates (“Natural Flavor”)
- Implement foundational nutrition protocol



# Treatment Tools and Protocols

- Typical treatment regime:
  - Initially, 2x/week for 2 weeks
  - Treat with spinal adjusting, craniosacral therapy, herbal ear drops (if acute), immune support (if acute), foundational nutrition, parent education; begin investigation of underlying cause if apparent from history





# Treatment Tools and Protocols

- At end of 2nd week, if biomechanical findings improve, but TM shows no improvement, use endonasal procedure 1x/week for 2-3 weeks (until os is clear).
- If continued recurrence, inflammation and/or middle ear effusion, then begin searching for underlying cause of chronic inflammatory state.
  - Once this is discovered and corrected, chronic inflammation and chronic OM will disappear



# Further Questions?

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