

Otitis Media and Nutrition Therapy

Kelly Dorfman, M.S., L.N.D.

with Dianne Lazer, MA, CCC-SLP/COM

Objectives

- Recognize when improving a patient's diet will improve clinical response to therapy
- Better clinical outcomes



Baby Brain

- 100 billion unconnected neurons
- Sensory rich experiences change the physical structure of the brain (increasing connections by up to 25%)
- Brain pruning just before birth



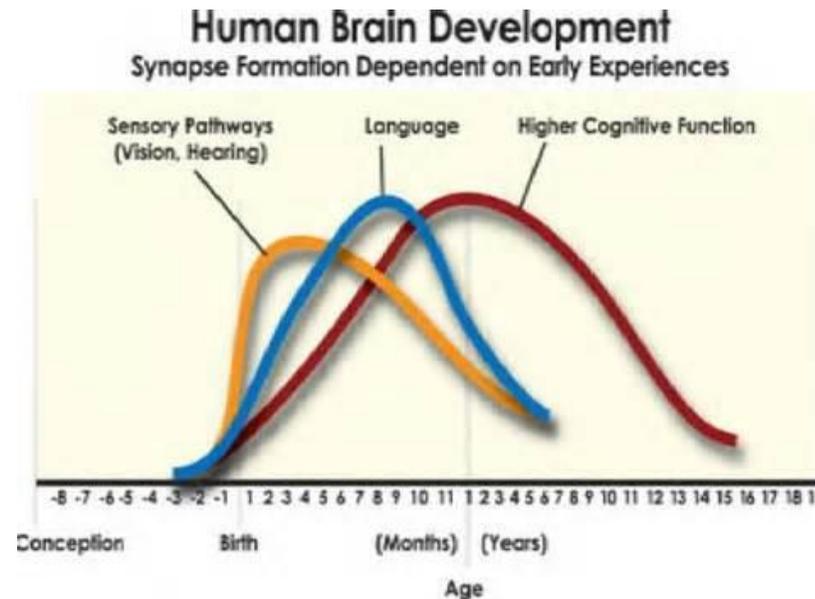
Developmental Timelines

- Brain functions evolve and develop at different rates and different times
- Each function has a window for optimal development

→ Syntax and a second language are most easily acquired before age 6



→ Foundations for auditory processing are laid down by age 3



Learning Physically Changes The Brain

- Hebb Model (“neurons that fire together, wire together”)
- Developed in 1970’s
- When two neighboring neurons are triggered at the same time on several occasions, the cells and synapses between them change chemically
- The connection can become so strong that they fire simultaneously instead of in sequence
- Association helps to tie new information into existing pathways (established pathways help strengthen weak signals)



Long Term Potentiation (LTP)

- A process where synapses become increasingly sensitive so that a steady level of presynaptic stimulation is converted to post-synaptic output
- Pathways can be strengthened or weakened
- Brain shapes itself (by forming electrochemical pathways) according to the activities



5 Signs that Nutrition Issues May Be Interfering with Therapy

- 50% or more of the diet is processed grains, packaged foods and/or snack foods that easily melt with saliva
- Patient prefers drinking to chewing or eating
- Parents refer to child as a picky eater
- Child is frequently sick
- Diagnosed with reflux or has a history of colic

How Ear Infections Affect Development

- “An association between recurrent otitis media in infancy and later hyperactivity,” Hagerman, R.J. & Falkenstein, A.R., Clinical Pediatrics, May 1987, 253-257.
- “Brief Report: Ear infections in autistic and normal children,” Konstantareas, M.M & Homatidis, S., J. of Autism and Dev. Dis., 17 (4), 1987, 585-593.
 - Found lower-functioning children had earlier onset of ear infections than peers.
 - Noted more ear infections in children with autism vs. other children.
- “Otitis media in early childhood and patterns of intellectual development and later academic performance,” Roberts, J.E., et al, J of Ped. Psych., 19(3), 1994, 347-367.
 - Discovered that children with early ear infections were more distracted according to teachers’ ratings.
- “ Behavior and developmental effects of otitis media with effusion into the teens,” Bennett, K.E. et al, Arch. Dis Child, 85(2), 2001, 91-95.
 - Behavior problems and reading issues still present in early teens of those with early ear infections.

Why babies are prone to ear infections

- Spend more time prone
- Have not developed blow, suck, swallow
- Anatomical area is small, easily clogged
- Immature immune system



Hearing vs. Listening

- Auditory processing turns sounds into usable information
- Hearing means the sounds registered
- Listening means they were remembered, organized and generated a related response



Post Traumatic Ear Infection Syndrome

- The ear infections resolve but the effects on auditory development are long lasting
- Auditory processing deficits
- Distractibility
- ADHD
- Trouble Learning Math
- Prioritizing/Decision Making
- Language and Motor Delays



The Obesity-Ear Infection Link

- Research found infections may lead to taste impairment and increasing risk to obesity
- Middle ear infections can damage the chorda tympani (nerve that carries taste information from front of tongue to brain)
- Those with a history of moderate to severe ear infections were 62% more likely to be obese
- Also a link between tonsillectomies and obesity. Six to 11 year olds who had tonsils removed were 40% more likely to be obese
- Other studies suggest taste damage limits enjoyment of flavors but intensifies ability to experience other sensations , such as texture.

Data presented at American Psychological Association meeting, Aug. 2008 by Dr. Linda Bartoshuk (University of Florida researcher)

Allergies and Ear Infections

“Role of food allergy in serous otitis media,” Nsouli, T.M., et al, Annals of Allergy, 73(3), 1994, 215-219.

Found an allergy elimination diet ameliorated ear fluid in 86% of children and it returned in 94% when food reintroduced.

“Otitis media and its relation to allergic rhinitis,” Fireman, P., Allergy Asthma Proc., 18(3), 1997, 135-43.

Suggests allergies may contribute to chronic otitis media.

“Cow’s mild allergy is associated with recurrent otitis media during childhood,” Juntti, H., et al, Acta Otolaryngol, 119(8), 1999, 867-73.

Children with cow’s milk allergy in infancy had significantly more recurrent otitis media later.



Allergies vs. Reactions

- Mediated by histamine



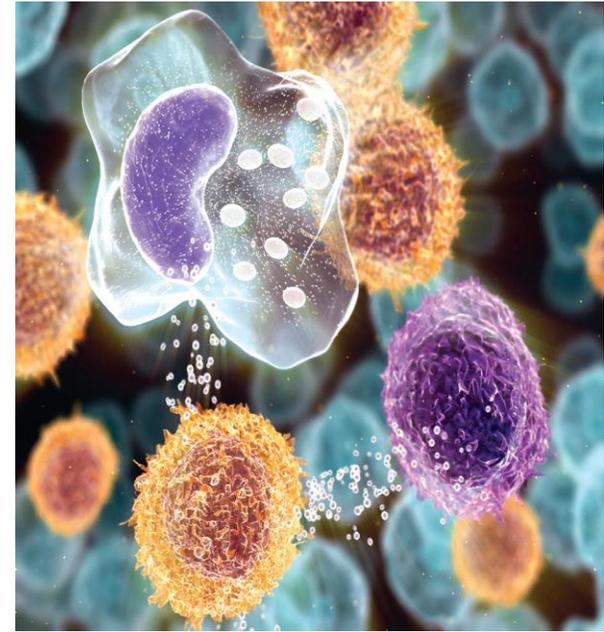
- Reactions within 2 hours
 - Involves itching and swelling
 - IgE levels high in the blood
 - Tested with scratch or RAST blood test
- Can be hours or days later
 - Wide variety of symptoms including headaches, stomach aches, mood changes, fuzzy thinking
 - Mediated by a variety of known and unknown reactions
 - Best test is elimination

How the Immune System Talks to the Nervous System

- Cells in the nervous system have receptor sites for messenger molecules (cytokines) reacting to antigens
- IgE (or traditional allergy) reactions represent half or less of possible reactions
- Individual responses depend on genetic tendencies, nutritional status and other factors

Cytokines

- Signaling proteins/glycoproteins that help cellular communication
- Secreted by immune cells (like T-helper cells) when they encounter a pathogen/allergen to recruit more cells and increase immune response
- Bind to cell surface receptors
- Can up/down regulate genes
- Names like IFN- γ , TGF- β , IL-4, IL10



Falling Apart in the Spring

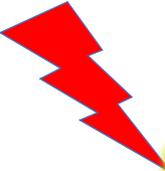
- Stimulant prescriptions highest in spring
- 2/3 kids with ADD/PDD deteriorate in spring
- Half the kids who regressed did not have traditional nasal symptoms
- Cytokines have receptor sites on immune and nervous system cell membranes



Pasteurization Theory

- Heat changes casein protein making it harder to breakdown
- Pasteurization destroys enzymes, lowers vitamin content (C, B12, B6), kills good bacteria
- Raw milk legal in 28 of 50 states
- 2007 study (University of Basel, Switzerland) found less asthma, pollen and food allergies in children consuming raw milk
- For more info: A Campaign for Real Milk: www.realmilk.com





Dairy Components

- Casein (80% of protein)- intolerance can trigger constipation, rashes, immune reactions (such as ear infections or frequent illness), reflux, fuzzy thinking
- Whey- less complicated protein
better tolerated
- Lactose (milk sugar)- intolerance causes stomach pain/cramps, loose stools

Cow's Milk vs. Goat Milk



- Beta casein A1 protein
- Higher in calcium
- 5x more vitamin B12
- 10x more folate
- Guernsey cows have 80% beta casein A2 (vs. 15% in Holstein and 40% in Jersey cow milks)

- Mostly Beta casein A2 protein
- Casein composition closer to human milk
- Fat and protein are easier to digest
- Less calcium than cow's milk
- Low in folate
- Lactose similar

'Milk' Alternatives

Cow's Milk (1 percent) 102 kcal

8.2 gr protein, 2.4 gr fat, 31% DV calcium

- **Coconut Milk (unsweetened)- 40 to 80 kcal**

0 gr protein, 4.5-5 gr fat, 10-30% DV calcium

- **Rice Milk (unsweetened)-90 to 130 kcal**

1 gr protein, 2 to 2.5 gr fat, 30% DV calcium

- **Almond Milk (unsweetened)- 30 to 50 kcal**

1 gr protein, 2 to 2.5 gr fat, 30-45% DV calcium

- **Hemp Milk- 70-140 kcal**

2-3 gr protein, 5 to 7 gr fat, 30-50% DV calcium



The Trouble with Soy

- Protein is structurally similar to casein in milk creating a high cross sensitivity
- Soybeans contain goitrogens (chemicals that block synthesis of thyroid hormone)
- Soy contains isoflavones which influence hormone development at high levels. In 2003 British Dietetic Assoc. issued a statement warning parents to avoid soy formula for the first 6 months to prevent hormone imbalances and avoid allergy sensitization.
- Excess soy may impede sexual maturation in boys and accelerate sexual maturation of girls.



For more info see: [The Whole Soy Story](#) by Kaayla Daniel, New Trends Publishing, 2007.

Milk Intolerance in Infants

- Blood in stools
- Frequent ear infections
- Colic/diarrhea
- Rashes/eczema
- Severe diaper rash
- Frequent spitting up



Formulas for Highly Sensitive Infants

- **Hydrolyzed formulas**

Nutramigen (Mead Johnson)- Hydrolyzed casein, corn syrup, soy oil

Alimentum (Ross Labs)- Hydrolyzed casein, sucrose, soy oil

- **Synthetic amino acid formulas**

Neocate (Nutricia)-corn syrup (54%), MCT, canola oil

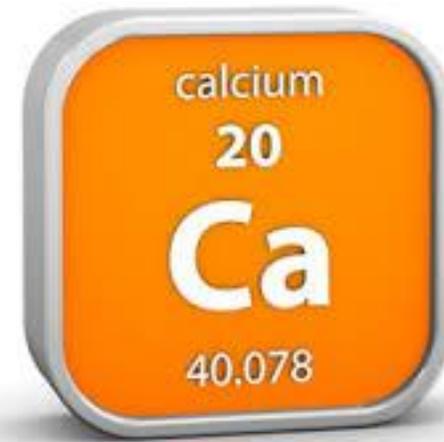
Elecare (Abbott)-corn syrup (55%), MCT, soy oil



Who Needs Calcium?

- People on dairy free diets or with reduced dairy intake
- About 2 out of 3 people because of inadequate intake (according to NHANES 2 survey)
- Women (less likely to have adequate intake than men)
- Individuals on a high protein diet
- Those with a high risk to bone loss

Calcium Dosing



- Most people need at least 800-1000 mg of a well absorbed form (DV is higher)
- Can only absorb 500mg at one time so if taking more than 500mg, split the dose
- Works best with vitamin D and Magnesium

Forms of Calcium



- Citrate- **best absorbed but acidic**
- Chelates (Malate, Aspartate, Lysinate)
- Hydroxyapatite or Calcium Phosphorus

- Carbonate- **least well absorbed but dense and inexpensive**

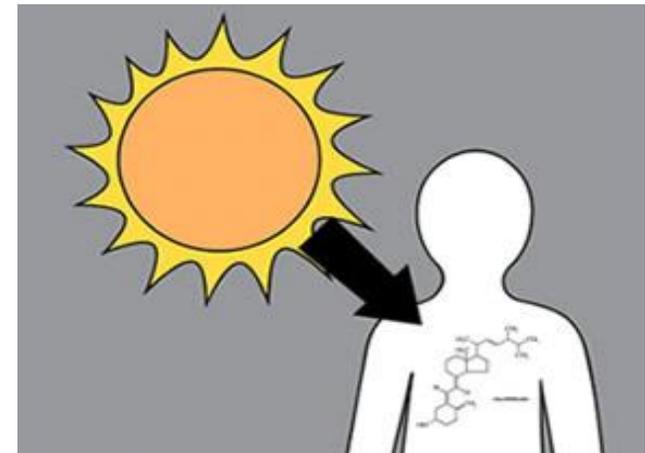
Non-Pill Calcium Supplements

- Calcium fortified orange juice (calcium citrate) - one cup maximum (about 300mg)
- Chewables
 - Nutrition Now Adult Gummies (2 = 500mg)
 - Adora (chocolates with calcium, a little magnesium)
- Powder
 - Kirkman (1-800-245-8282) plain or flavored
 - Thorne Effervescent Calcium/Magnesium powder
- Liquids- may have too much magnesium for young children
 - Buried Treasure- Calcium Plus
 - Child Life- Liquid Calcium with Magnesium

Vitamin D

- Activated vitamin D, calcitriol, is a potent neurosteroid hormone critical in mammalian brain development.
- >70% women and children low in vitamin D
- In rats, maternal vitamin D deficiency results in increased brain size and enlarged ventricles- abnormalities similar to children with autism.
- Autism is more common in those with dark skin where vitamin D deficiency is more common.
- Perfect number for Vitamin D, 25-OH , total = 50 ng/mL

JJ Cannell. Autism and Vitamin D. Medical Hypotheses, 2008: 1-17. wadeandersonpt.com



When To Refer to a Feeding Specialist

- Parents are not improving the child's diet despite other interventions
- Drooling or pica
- Frequent missed appointments due to illness
- History of sensory processing symptoms
- Articulation or speech delays
- Child is an unusually sloppy or slow eater



Thank You!

"Her research is solid, her insights are excellent, and her advice is just what you need."
—THE WASHINGTON POST

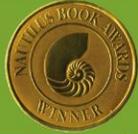
CURE YOUR CHILD WITH FOOD



SOLUTIONS FOR

- ☑ Picky eating
- ☑ Reflux
- ☑ Stomachache
- ☑ Ear infections
- ☑ Failure to grow
- ☑ Constipation
- ☑ Rashes
- ☑ Sleeplessness
- ☑ Mood disorder
- ☑ ADHD and SPD
- ☑ Hyperactivity
- ☑ Dyspraxia (speech delays)
- ☑ and more

**The Hidden Connection
Between Nutrition and
Childhood Ailments**



KELLY DORFMAN, MS, LND Foreword by Richard E. Layton, MD,
PEDIATRIC ALLERGY SPECIALIST

www.facebook.com/kellydorfmanms

www.twitter.com/NutritionSleuth