Image Awareness Wellness Institute

Asthma

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Asthma

The incidence of asthma increased in U.S. children from 3.6% in 1980 to 5.8% in 2003. It was the third leading cause of death in those under the age of 18 after pneumonia and injuries. Increases and incidence in some other countries was even more dramatic. For example, in 1990 parents in Australia reported that 46% of children under 8 years old were reported to suffer from asthma or wheezing. Asthma is usually characterized by wheezing, shortness of breath, and attacks characterized by difficulty breathing which can result in death. Waltraud notes, "Airway hyperresponsiveness, the exaggerated narrowing of the airways after the inhalation of various stimuli, is a key feature of asthma." This hyperresponsiveness is associated with heightened immune responses to common inhaled and food allergens.

The rapid increase in the disease suggests that the major factor in this epidemic is not genetic, but environmental. It appears to be associated with pollution and malnutrition in particular. Measurement of blood levels of IgE often finds elevated levels of this classic measure of allergy. Skin testing also often finds increased reactivity to environmental substances.

There does appear to be an association between obesity and incidence of asthma. Loss of weight improves breathing.

References:

Eder, Waltraud, et al., The Asthma Epidemic, *N Engl J Med* 2006;355:2226-35.

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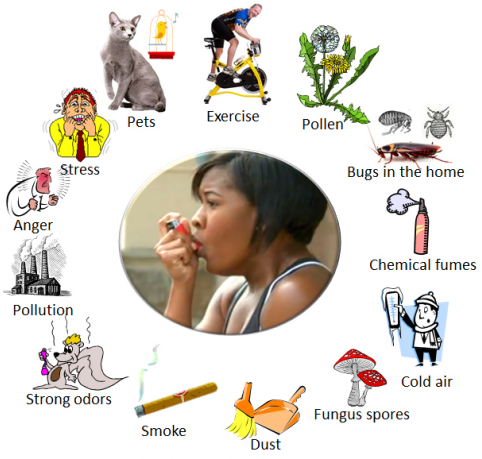
Allergy

There are two types of allergic or hypersensitivity manifestations: immediate (often within twelve minutes of exposure) and delayed (often 48-72 hours after exposure). Classic allergy testing and treatment focuses on immediate reactions with the skin scratch tests so many are familiar with. These are what are often called IgE responses and look at antibody formation. Delayed hypersensitivity responses are initiated by cells rather than antibodies.

Immediate Reactions

As many as four out of five adults and children with asthma have 1 or more positive immediate wheal-and-flare skin test responses to environmental allergens. Acute asthma symptoms can be induced in sensitized individuals by inhalation of airborne allergens to which they have developed specific IgE antibodies. This is particularly true if there are high levels of these allergens in the air in their homes.



Asthma Triggers

Pets, bedding, and carpets are often sources of airborne allergens which can include dust mites, cat hair and saliva, roaches, and molds. Allergists suggest thorough cleaning of the home at least weekly, particularly bedding. Washing items in hot water is beneficial.

Delayed Reactivity

Delayed allergic responses can also contribute to asthma. This suggests that testing for IgE antibodies may be helpful in the treatment of asthma, but may not provide the complete picture. Cell mediated hypersensitivity results in the production of cytokines or inflammatory tissue chemicals which prime the body for hypersensitivity responses including immediate responses.

Cellular hypersensitivity responses can be primed by viral infections or by hapten reactions. Haptens are chemicals that can attach to cells, changing their structure to something the body recognizes as abnormal resulting in immune response.

Reactions to haptens like toluene and viral infections both appear to contribute to allergic responses and the development of asthma as well as contributing to the intensity of the disease.

References:

Kalish, Richard S., et al., Molecular mechanisms of CD8+ T cell–mediated delayed hypersensitivity: Implications for allergies, asthma, and autoimmunity, *Molecular Mechanisms in Allergy and Clinical Immunology*, 1999;103(2) Part 1: 192-199.

Eggleston PA, et al, Environmental Allergen Avoidance in Allergic Asthma, *J Allergy Clin Immunol*, February, 1999;103:203-205.

Hydrochloric Acid

One of the earliest studies of nutrition and asthma was conducted by George Bray. Bray found that 90% of children under 7 years of age with asthma has deficient hydrochloric acid production while this condition was found in only 10% of children without asthma.

Previous infections were apparently contributing to the low stomach acid condition. Many of the children with low hydrochloric acid in the stomach had suffered with whooping-cough and measles complicated by bronchopneumonia. These children also seemed more prone to hives, hay fever, migraine or eczema.

Bray suggested that many cases of asthma in adults were associated with low stomach acid as well. Bray tested supplementation with hydrochloric acid along with removal of allergens in several hundred children he worked with for a year and a half and noted remarkable improvement in the frequency of asthma attacks.

Incomplete digestion of foods allows undigested food particles to be absorbed into the bloodstream resulting in the release of inflammatory cytokines or tissue hormones. This may be a mechanism of priming the immune system for asthma attacks.

Jonathan Wright notes that milk may contribute to low stomach acid as it can neutralize acids. In addition, allergic response to milk can result in inflammation of the stomach contributing to undigested food and deficiencies of nutrients like vitamin B12, B6, and magnesium.

References:

Bray, George W., M.D., The Hypochlorhydria of Asthma in Childhood, Journal of Nutritional Medicine, 1990;1:347-360/Quarterly Journal of Medicine, 1931;24:181-197.

Wright, Jonathan V., M.D., Treatment of Childhood Asthma With Parenteral Vitamin B12, Gastric Re-Acidification, and Attention to Food Allergy, Magnesium and Pyridoxine: Three Case Reports With Background an Integrated Hypothesis, Journal of Nutritional Medicine, 1990;1:277-282.

Herbert, Jr., M.D., Consider Magnesium Homeostasis, Mansmann, Herbert, Jr., M.D., *Pediatric Asthma, Allergy and Immunology*, 1991;5(3):273-279.

Magnesium

Magnesium is one of the most frequent deficiencies in the human diet. Magnesium in the test tube will cause relaxation of the muscles of the respiratory tract. In studies of human beings it has been shown to be a brochodilator in both children and adults. As little as 100 mg a day improves respiratory volume if deficiencies exist. Low magnesium intake may also contribute to the development of asthma. Intravenous use of magnesium has been suggested as an adjunct to standard therapy in the emergency department for severe asthma.

Absorption of magnesium can be difficult. This explains why results of supplementation can vary. Patents have been granted with strategies to improve magnesium absorption where it is compromised.

References:

Noppen M, Magnesium Treatment for Asthma: Where Do We Stand? *Chest*, August 2002;122(2):396-398.

Bichara, Marcela Davalos, et al., Magnesium for treatment of asthma in children, *Canadian Family Physician,* Sept 2009; 55 (9) 887-889;

https://patents.google.com/patent/US20110183034A1/en Enhancement of magnesium uptake in mammals.

Carotenoids

Intake of carotenoids by those with asthma and those without are similar, yet when comparisons of tissue levels of carotenoids are measured those with asthma have lower levels of carotenoids. Wood suggests that this is due to increased utilization of these nutrients in those with asthma.

Oral administration of lycopene, the red pigment in tomato and pink grapefruit, decreases the tendency for the lungs of sensitive individuals to spasm during exercise.

Intake of fruits and vegetables is also protective against the development of asthma. Supplementation with individual carotenoids has not shown the benefit of intake of the entire spectrum of the carotenoids as found in fruits and vegetables. For this study the high intake of fruits and vegetables was 7 servings a day while the low intake was 3 servings a day. The intake was weighted in favor of vegetables.

Carotenoids have a double benefit. They both act as antioxidants, but also have inhibitory activity against one of the more potent inflammatory compounds produced in the body (nuclear factor- κB (nF-κB)) Subjects in one study were more than twice as likely to see increased respiratory symptoms when on a diet low in antioxidants than those on a diet high in antioxidants.

Studies on the NeoLife Carotenoid Complex have shown that it increases blood levels of carotenoids where deficiencies exist as well as enhancing immune function and reducing oxidative damage to cells.

Carotenoids are the fat soluble coloring pigments in foods with powerful antioxidant properties. Polyphenols are water soluble coloring pigments in foods with similar anti-

oxidant and anti-inflammatory properties. Polyphenols have also been suggested as beneficial for asthma.

References:

Wood, Lisa, et al., Lycopene-Rich Treatments Modify Noneosinophilic Airway Inflammation in Asthma: Proof of Concept, *Free Radic Res*, 2008; 42(1): 94-102.

Wood, Lisa, et al., Manipulating antioxidant intake in asthma: a randomized controlled trial, *The American Journal of Clinical Nutrition*, Volume 96, Issue 3, September 2012, Pages 534–543, https://doi.org/10.3945/ajcn.111.032623

Magrone, Thea, and Jirillo, Emilio, Influence of polyphenols on allergic immune reactions: mechanisms of action, *Proceedings of the Nutrition Society*, 2012; 71: 316–321.

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Vitamin C

Vitamin C is probably the most important nutrient to take for alleviation of symptoms of asthma. This nutrient has a well-documented antihistamine effect and a bronchodilating effect.

Histamine

Johnston and associates report the following: "Vitamin C destroys the imidole ring of the histamine molecule, and an inverse relationship has been demonstrated between plasma vitamin C concentrations and blood histamine. This result could be of importance as histamine can aggravate the respiratory tract and impair neutrophil chemotaxis, resulting in allergy-like symptoms and weakened immunity."

The relationship of histamine and vitamin C is an inverse one. In other words, the higher the blood level of vitamin C the lower the histamine levels tended to become.

Interestingly, research suggests that significant quantities of histamine can be produced by gut bacteria and absorbed into the body in nonobese asthmatics.

Oral vitamin C supplementation may be helpful under these circumstances. Both vitamin C and magnesium tend to contribute to loose stools or diarrhea at excessively high levels of intake. An episode of loose stool or diarrhea could alter levels of bacteria in the colon, possibly alleviating asthma symptoms temporarily.

Broncoresponsiveness

Vitamin C appears to help many asthmatics who experience problems with exercise. Placebo controlled trials have shown that two grams of vitamin C can reduce bronchial sensitiveness to cold, smog from traffic fumes, and hay fever.

Most of the studies with vitamin C use 500 mg or less of the vitamin once a day. This introduces two factors which may limit the benefit of the vitamin. Firstly, the half-life of vitamin C at higher doses is only about 30 minutes and secondly, higher doses often produce better results.

References:

Johnston, Carol, et al., Vitamin C: Overview and Update, *Journal of Evidence-Based Complementary & Alternative Medicine*, 2011; 16(1) 49-57.

Johnston CD, et al., Vitamin C depletion is associated with alterations in blood histamine and plasma free carnitine in adults. *J Am Coll Nutr*. 1996;15:586-591.

Frei, Remo, et al., Histamine-secreting microbes are increased in the gut of adult asthma patients, Nov. 2016; *J Allergy Clim Immunol*, 138(5): 1491-1494.

Cohen, Herman A., M.D., et al, Blocking Effect of Vitamin C in Exercise-Induced Asthma, *Archives of Pediatric and Adolescent Medicine*, April, 1997;151:367-370.

Bucca, C., et al, Effect of Vitamin C on Transient Increase of Bronchoresponsiveness in Conditions Affecting the Upper Respiratory Airways, Beyond Deficiency: New Views on The Function and Health Effects of Vitamins, *New York Academy of Sciences*, February 9-12, 1992.

Vitamin D

Research is currently being conducted to attempt to clarify the relationships between gut bacteria, vitamin D, and the development of asthma. It appears that the wrong kind of bacteria taking up residence in the respiratory passages and gut may contribute to asthma. Vitamin D also appears to play a role in the bacterial population of the respiratory passages.

Recent research suggests that deficiency of vitamin D during pregnancy at 16-20 weeks of development impairs lung development increasing the likelihood of asthma at 6 years of age.

Zosky and associates concluded, "This study supports the notion that vitamin D deficiency during lung development may impact on postnatal lung growth and increase the risk of developing lung disease."

Studies with mice have shown that vitamin D deficiency results in both decreased lung volume and poorer lung functioning. Vitamin D deficiency contributes to hypersensitivity of lung tissue, and the greater the deficiency of the vitamin the greater tends to be the hypersensitivity.

Vitamin D is an important component of immune function, particularly through its enhancement of cathelicidin, an antimicrobial peptide which protects against flu and other viruses.

Vitamin E has been shown to improve immune function of the lungs as well. This vitamin has an affinity for lung tissue and those with severe asthma tend to have lower levels of vitamin E than those with less severe forms of the disease.

Studies have also shown that those with asthma often have low levels of vitamin A.

References:

Celedon, Juan C., et al., Gut microbiota, probiotics, and vitamin D: Interrelated exposures influencing allergy, asthma, and obesity? J Allergy Clin Immunol 2011;127:1087-94.

Zosky, Graeme R., et al., Vitamin D deficiency at 16 to 20 weeks' gestation is associated with impaired lung function and asthma at 6 years of age, *AnnalsATS,* May 2014; 11(4):571-577.

Zosky, Graeme R., et al., Vitamin D deficiency causes deficits in lung function and alters lung structure, American Journal of Respiratory and critical care medicine, 2011; 183: 1336-1343.

Foong, Rachel E., et al., Physiological Reports, Vitamin D deficiency causes airway hyperresponsiveness, increases airway smooth muscle mass, and reduces TGF-β expression in the lungs of female BALB/c mice, 2014; 2(3):1-12.

Pletsityi KD, et al., Vitamin E: Immunocorrecting Effect in Bronchial Asthma Patients," *Vopr Med Khim*, July-August 1995;41(4):33-36.

Allen S, Britton JR, et al, Association between antioxidant vitamins and asthma outcome measures:

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systematic review and meta-analysis, *Thorax*, 2009; 64(7): 610-9.

Fat Intake

A number of studies have shown that the ratio of omega-3 fatty acids to omega-6 fatty acids plays a role in protecting against the symptoms of asthma. A study of 335 children by Oddy and associates was summarized as follows: "Conclusion:We found evidence for a modulatory effect of the dietary n-6:n-3 fatty acid ratio on the presence of asthma in children. Our results provide evidence that promotion of a diet with increased n-3 fatty acids and reduced n-6 fatty acids to protect children against symptoms of asthma is warranted."

A study by Li and associates conducted a 20 year study of over 4,000 young adults 18-30 years of age. They found a significant inverse association between the intake of omega-3 fats (particularly DHA) and the development of asthma over that period of time.

Studies of this nature could be multiplied, but it is important to understand why fat intake plays a role in asthma. Intake of excessive omega-6 fats tends to promote inflammatory responses in the body. Much of this is mediated through arachidonic acid, the precursor to inflammatory leukotrienes and blood clotting factors called thromboxanes.

The omega-3 fats (especially EPA) displace arachidonic acid in cell membranes and also (through DHA) mediate the resolution of inflammatory responses.

Several studies have shown that the benefits of omega-3 fats may be inhibited or blocked by POP's (persistent organic pollutants). For example, omega-3 fatty acids tend to reduce the risk of obesity and diabetes, but if the oils contain pollutants this beneficial effect is blocked. The purity of the omega-3 fat intake may play a role in the benefits of supplementation.

Pesticide exposure can aggravate asthma symptoms and may contribute to the condition as well.

References:

Oddy, W.H. et al., Ratio of omega-6 to omega-3 fatty acids and childhood asthma, Journal of Asthma, 2004; 41(3):319–326,

Li J, Xun P, et al, Intakes of long-chain omega-3 (n-3) PUFAs and fish in relation to incidence of asthma among American young adults: the CARDIA study, *Am J Clin Nutr*, 2013 Jan; 97(1): 173-8.

Granström, E. The arachidonic acid cascade. *Inflammation* 8, S15–S25 (1984). https://doi.org/10.1007/BF00915709

: Lise Madsen & Karsten Kristiansen (2012) Of mice and men: Factors abrogating the antiobesity effect of omega-3 fatty acids, *Adipocyte*, 1:3,173-176, DOI: 10.4161/adip.20689

Barouki, Robert, et al., Inflammatory Pathway Genes Belong to Major Targets of Persistent Organic Pollutants in Adipose Cells, *Environmental Health Perspectives*, April 2012: 120(4)| :508-514.. Ernst P, Pesticide Exposure and Asthma, *Am J Respir Crit Care Med*, 2002;165:563-564.

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