Lactose Intolerance and Bone Health

October 13, 2011
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According to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), between 30 and 50 million Americans are lactose intolerant. Lactose intolerance is a condition that results from a deficit of lactase, an enzyme produced by the cells lining the small intestine. Lactase is necessary to digest lactose, the natural sugar found in milk. When sufficient lactase is not present, lactose is not properly broken down in the small bowel and travels through the intestines unchanged. In the intestines, undigested lactose has a laxative effect and stimulates the growth of bacteria that produce significant amounts of gas. Within 30 minutes to two hours after ingesting lactose, abdominal cramping and diarrhea often occur. These symptoms are essential to a diagnosis of lactose intolerance.

In most individuals, intestinal lactase levels are highest during infancy and early childhood, when milk is the primary source of nutrition. After weaning, there is a gradual decline in intestinal lactase activity in more than 70% of the population. In less than 30% of the population, especially in those of northern European descent, high lactase levels continue until adulthood. For this reason individuals of northern European ancestry are least commonly affected by lactose intolerance. Lactase activity decreases with age among individuals in select ethnic and racial groups. According to NIDDK, up to 75 percent of all adult African Americans and Native Americans and 90 percent of Asian Americans are considered to be lactose intolerant.

Some experts have proposed that the prevalence of lactose intolerance has been exaggerated. The National Dairy Council suggests that many people who report being lactose intolerant may actually have lactose maldigestion. Individuals with lactose maldigestion have insufficient lactase to break down lactose completely, but they do not develop the severe gastrointestinal symptoms as those who are lactose intolerant. Unlike men and women who are lactose intolerant, individuals with lactose maldigestion tend to produce enough lactose to permit consumption of small portions of dairy products without developing symptoms. The key with these individuals is to consume small amounts of dairy products at a time so that there are sufficient amounts of intestinal lactase available to digest the lactose load. When the lactose is sufficiently digested, symptoms do not develop.

Since dairy products are a major source of dietary calcium, it might be argued that individuals with lactase deficiency might avoid dairy products, be calcium deficient, and at increased risk for osteoporosis. However, research exploring the role of lactose intolerance on calcium intake and bone health has produced conflicting results. Studies involving perimenopausal Finnish women and postmenopausal Italian women found that lactase deficiency negatively impacted bone mineral density. Other studies, however, have not shown such an association. For example, Slemenda and associates found no evidence that lactase deficiency impacted bone density in pre- or postmenopausal women. This finding was supported in other studies involving postmenopausal women.

Perhaps one reason that women with lactose deficiency may not be at increased risk for osteoporosis, is that such women may not avoid milk and other dairy products. This contention was supported by an analysis of NHANES and NHANES II data that showed that the presence of lactase deficiency in certain ethnic groups was not predictive of milk consumption practices. This analysis, by Looker and associates, also demonstrated the importance of other dietary sources of calcium in various ethnic groups, such as corn tortillas for Mexican Americans, and pizza and rice for Cuban Americans and Puerto Ricans.

Studies have shown that in people who have at least some intestinal lactase, tolerance to lactose can be increased when dairy products are gradually introduced into the diet. Also, certain sources of dairy products may be easier for people with lactase deficiency to digest. For example, ripened
cheese may contain up to 95 percent less lactose than whole milk. Yogurt containing active cultures also lessens gastrointestinal symptoms. A variety of lactose-reduced dairy products--including milk, cottage cheese, and processed cheese slices--are available, as are lactase replacement pills or liquid.

References:
Resources on lactose intolerance are available from the following organizations:
National Digestive Diseases Information Clearinghouse produces a fact sheet Lactose Intolerance. Single copies are available by writing 2 Information Way, Bethesda Maryland, 20892-3570. Information can also be obtained at the NIDDK web site.
National Fluid Milk Processor Promotion Board produces a brochure The Lowdown on Lactose Intolerance. Single copies are available by calling 1-800-WHY-MILK. Information can also be obtained at the Why Milk website.

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