

## Obesity and Osteoarthritis

Osteoarthritis (OA), a most common joint disorder, is an active process of degeneration (cartilage loss) and repair of cartilage and subchondral bone (hypertrophy) associated with synovial inflammation. Various biochemical, mechanical and genetic factors are involved in this process. The cartilage cells (chondrocytes) respond to injuries by producing degradative enzymes and by developing inappropriate repair response. Epidemiological studies have shown that obesity increases the risk of development of symptomatic and radiographic OA. There is 15% increase in risk of OA for every additional unit of BMI over 27 kg/M<sup>2</sup>. Association of OA with obesity is observed in weight bearing (knee, hip) as well as non-weight bearing (hand) joints. Loss of body fat decreases OA symptoms more than loss of total body weight. Adipose tissue secretes adipokines. Several adipokines are expressed in body fat as well as joint fat pad and synovium. Leptin, an adipokine, is present in larger quantities in joints of female OA patients. Leptin, adiponectin and other adipokines increase formation of nitric oxide (oxidant) and several other degradative factors such as matrix metalloproteinases. Adipokines are now recognized as key mediators in the pathophysiology of OA. Cartilage is virtual bone. Increasing amounts of bone marrow fat affect bone turnover by inhibiting osteoblasts (bone forming cells) and by activating osteoclasts (bone destroying cells). Asthidhatu is formed after Medodhatu according to Kshir-Dadhi principle (Ch. Chi. 15/16). Arthritis is not mentioned as a feature of obesity (Medorog/Sthoulya). Meda, and not other dhatus, accumulates in obese individuals (Ch. Su.21/4). This implies loss of cartilage too. Excess Meda causes srotorodh and accelerates activity of Vata-dosha. Vata-dosha stimulates Jathar-agni. This may imply activation of various degradative enzymes observed in OA joint. Therapy of OA must, therefore, be directed to Medodhatu. Meda is moolastan of Asthivahasrotas (Ch. Vi. 5/8). A recent consensus statement (Jour. Asso. Phy Ind , Feb 2009) recommends normal BMI for Asian Indians as 18-22.9 kg/M<sup>2</sup> and waist circumference of 78 cm for men and 72 cm for women.