

Bone Quality and Nails

Osteoporosis is an important ailment commonly overlooked by clinicians. Being usually asymptomatic, it is also called as a "silent killer disease". Patients are usually unaware of their disease until fracture occurs. Patient lands up in a hospital after an unexpected fracture. It is estimated that in 2003, 2.5 crore women in India had osteoporosis. This number is expected to rise by further One Crore in next decade. Low bone mass is an important feature of osteoporosis. Total and regional as well as mineral and osteoid bone mass are reduced in osteoporosis. There is micro- architectural deterioration of bone tissue leading to increased bone fragility. Fragility means compromised bone strength which reflects integration of two main features, bone density and bone quality. Increased bone fragility leads to increase in fracture risk. Osteomalacia is another disease due calcium and Vitamin D deficiency wherein bone mass is variable and under mineralized. Bone loss is a feature of osteoporosis whereas under mineralization is a feature of Osteomalacia. Kshaya means loss, decline, decay, diminution or waning. Dalhan has aptly defined kshaya as "swapramanhaani" (S. Su. 15/24) whereas Chakrapanidatta describes it as rahasaha or nyuntvam (Ch. Su. 17/4). World Health Organization defines low bone mass on the basis of bone mineral density (BMD). This is presently done by Dual Energy X-ray Absorption (DXA) technique. DXA requires special equipment, is costly and not easily available. Brittle nails are a well known feature of Osteomalacia. Bone quality test is now being developed for diagnosis of osteoporosis by spectroscopic analysis (laser system) of disulfide content in fingernails which is lower in osteoporotic individuals compared with controls. Although bone collagen and nail keratin are two distinct structural proteins, both require protein sulfation and disulfide bond formation via cysteine for structural integrity. This test is likely to be cheap, repeatable and would not require presence of the patient. Nails are mala of Asthidhatu. Mala-pariksha is an integral part of clinical examination of patients. Nakha-bhanga is a feature of asthikshaya. Sthoolnakh is a feature of asthisarata. Asthi dhatudushti must be suspected in all cases with abnormal nails.