Osteoporosis

Recently the prevention, diagnosis and management of osteoporosis have been attracting increasing attention. In part, this has been because of our heightened wareness of its significant morbidity and mortality, comparable to diseases that are ell known to cause illness and death-for example, stroke heart attack and cancer. The estimated 25 million people who suffer from osteoporosis, five million of whom are thc frequently disregarded men, can now be helped by earlier diagnosis and preventive treatment.

Osteoporosis by definition is a systemic skeletal disease characterized by low bone mass and microarchitectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture and now changes in bone quality. It is a silent disease responsible for 1.3 million fractures annually in the U.S. alone, at an annual cost of 10 billion dollars. Over 500,000 vertebral fractures occur annually, causing a loss of height, pain and back deformity (dowager's hump). There are more than 250,000 hip fractures annually, 50,000 of which result in death within the first year and another 125,000 patients who never fully recover. The Dual Energy X-ray Absorptiometry (DEXA) has become the gold standard for both the diagnosis and traclung of osteoporosis, and has replaced the quantitative CAT exam in the field of osteoporosis. Not only is the DEXA machine the single most precise tool available, but it is also faster and less costly. It exposes the patient to less radiation than a CAT (1/500 of a CAT and 1/20 of a chest x-ray exposure), and the patient can be serially followed at multiple sites. The scanning of the AP spine and both femurs, the two standard views, take less than ten minutes to accomplish, with the patient reclining, fully clothed, on the densitometer. The test helps identify low bone mass, the single most accurate predictor of increased fracture risk. At the same time, it helps to confirm the diagnosis, assess the severity and rate of bone loss, and monitor the effects of therapy.

There are several common indications for bone densitometry testing. They include postmenopausal women with two or more risk factors. The more common risk factors are a previous fracture during adult years with minimal trauma, or a fracture that occurs in a classic osteoporotic site, namely the vertebrae, wrist, hip or pelvis. Other common risk factors include alcohol abuse, being over 65 years old, or loss of height greater than one inch. Other common indications include chronic orticosteroid medication and evaluation and monitoring treatment programs for osteoporosis, for example baseline and yearly.

When assessing osteoporosis by bone densitometry, a change of one standard deviation in bone mineral density below the mean of young normal values approximately doubles the risk of all fractures. The specific definition of osteoporosis from the World Health Organization is 2.5 standard deviation of bone density below the mean. Other groups have used the 2.0 standard deviation criterion as their

definition. Osteopenia, a milder bone loss, is between 1 .O and 2.49 standard deviations below the young adult mean.

The goals of therapy are to reduce the incidence of osteoporotic fractures, to stop or reverse bone loss by inhibiting bone resorption and or stimulating bone formation, and to increase bone mass. Not only is there a new bisphosphonate medication available (Boniva) in addition to Actonel, Fosamax, and Fosamax Plus D, but there are 3 new formulations of older medications on the market: a combination of estrogen and progesterone (Prempro and Premphase); a nasal inhalation calcitonin spray Miacalcin); and a slow-release sodium fluoride (not yet available). The parathyroid hormone Forteo has also been released. A new variation of parathyroid hormone is being investigated (Preos).

A class of drugs called SERMS (Selective Estrogen Receptor Modulators) is also available, such as Evista and newer SERMs may soon be released (lasofoxifene and bazedoxifene). Even newer bisphosphonate intravenous formulations (Aridia and Zometa) are being used. Boniva as an intravenous treatment is also being investigated. Flavones (a class of estrogens derived from plants) and strontium ranelate (Protos) loom on the horizon as new treatments. These possibilities accompanied by the excellent diagnostic and monitoring ability of the DEXA machine, offer increased optimism in our ability to prevent fractures, reduce morbidity and mortality, and to make possible a better quality of life.