KURZE MITTEILUNG

Z. Ernährungswiss. **18**, 295 (1979)

ISSN 0044-264 X

Bone loss and aging

I. Clark

Growing old is inevitable as is the loss of bone during the aging process. Like aging, loss of bone has no regard for economic status, race or geographical distributions. Osteoporosis, which is frequently defined as less bone of normal composition, is a health problem of major significance throughout the world. Its etiology is still obscure although many investi -gators believe there may be several osteoporoses with different etiologies. Although little is known about its etiology – despite enormous speculation and experimentation – much is known about the syndrome of osteoporosis, namely pain, fractures, loss of stature and in some instances loss of teeth. One of the main problems in the study of bone loss is to differentiate between normal (physiologic) and abnormal (pathologic) bone loss. Since aging involves all organs of the body such as the endocrine glands, "physiologic" aging actually may be "pathologic" as a result of changes in other systems.

For over a century it has been recognized that fractures are by far more common in old people than in the young. Also, they are more common in females than in males and in the whites than in blacks. Using spinal density as an index of bone loss, studies have shown that the density fell after menopause. It fell more rapidly after artificial menopause – clearly indicating the involvement of estrogens in this condition.

Accompanying the bone loss that occurs after menopause, there is a marked increase in the lower forearm fracture. No such increase however occurs in men. Indeed there is no or little loss of bone in men at the same time. These observations indicate that the etiology of bone loss may involve hormonal and genetic factors. However, some investigators feel that post menopausal osteoporosis may be a marrow tissue disorder.

Although there is some disagreement about the age of onset of bone loss, most investigators feel that very likely it begins in women at about the age of 40. There is also disagreement concerning the mechanism of bone loss in aging; most investigators believe it to be a consequence of reduced new bone formation. Nutritional osteoporosis caused by calcium deficiency results from increased parathyroid activity; experimental proof of this came from studies in which calcium deficiency osteoporosis could not be demonstrated in parathyroidectomized animals. Hypersecretion of adrenal cortical hormones or the administration of glucocorticoids results in osteoporosis and there are indications that changes in the pattern of secretion of adrenal hormones in aging. The interrelations between hormones, nutritional and other factors on bone loss will be discussed.