Evaluation of bone mineral density (BMD) of the ancient peoples has received great interest by anthropologists. The aims of this study are to investigate the lumbar vertebrae of the Iasos people during the Byzantine period, in order to determine the prevalence of bone loss and to interpret dietary conditions of ancient Mediterranean populations. Lumbar vertebrae belonging to twenty eight skeletons of the 6th c AD were analyzed by radiographs and dual energy X-ray absorptiometry. The BMD values for each biologic sex and age group were compared. The correlation between the BMD and radiological features was also analyzed. The mean BMD was 0.940 g/cm2. BMD was decreased by aging in both sexes, but it was not significant. Osteopenia was found in 11 (39%) and osteoporosis in 4 (14.3%) out 28 vertebrae. The BMD was normal in 13 (46%) out of 28 vertebrae. Osteopenia was present in 7 (38%) of 18 male vertebrae and 4 (40%) of 10 female vertebrae. The spine score was high in the male group and there was a strong positive correlation between the BMD and spine score for both sexes. This study revealed that the BMD decreased by aging and that osteopenia was a problem in both sexes of the Iasos people during the 6th c AD. There was no correlation between the BMD and radiological features for age groups and biological sexes.