revealed abnormal RI defect. Fifteen lesions (79.0%) were detected by X-p and thirteen (68.4 %) by both X-p and RI imaging. To compare X-p with RI imaging in detecting these lesions, 8 (42.1 %) were equally detected by each methods and in 8 (42.1 %) RI imaging exceeded X-p and in 3 (15.8 %) X-p exceeded RI imaging. $^{169}$Yb-citrate imaging seemed to detect more accurately osteolytic changes than osteoplastic changes, and in a case of almost complete osteolytic change, it revealed the lesion as RI defect. After radiation therapy, RI accumulation decreased.

Because of its little accumulation on liver and no disturbance by activity in urinary tract like $^{87}$Sr, $^{99}$mTc-pyrophosphate and $^{99}$mTc-polyporphosphate, $^{169}$Yb-citrate is suitable for imaging in lumbar vertebral and pelvic region. Unfortunately, it highly accumulates in salivary glands and nasal cavity, it is difficult to image the lesion of head and neck region.

From our experience, it must be remembered that some cases will reveal the lesion as RI defect and that sternum and thoracic vertebra confuses in frontal view, then lateral view sometimes reveals useful.

$^{169}$Yb is non-beta emitter and has suitable gamma-ray energy for imaging, and has a long shelf life (physical half life; 32 days).

From a standpoint of radiation dose to skeletal system, large dose cannot be administered but selection of cases makes the nuclide to be relatively low-cost and useful bone seeking agent.

The Clinical Evaluation of $^{18}$F Imaging for Neoplastic Skeletal Diseases

—A comparative study with $^{87}$Sr and $^{99}$mTc phosphorous compounds—

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The purpose of this study is to evaluate the usefulness of $^{18}$F as a bone tumor scanning agent. Routine bone scanning has been carried out with $^{99}$mTc phosphorous compounds and conventional rectilinear scanner now in our department. Comparative studies between $^{18}$F and $^{87}$Sr and $^{99}$mTc phosphorous compounds were performed in thirty seven cases, including thirteen cases of primary skeletal neoplasms, twenty one cases of metastatic skeletal neoplasmes and three cases of skeletal inflammations.

In case of $^{87}$Sr scans it takes longer time for radioactivity to clear from the blood and soft tissues compared with $^{18}$F cases. So in general, the body background activity is much higher in $^{87}$Sr scan.

In all cases, scan were positive both with $^{18}$F and $^{87}$Sr and $^{99}$mTc. In conclusion we feel that $^{18}$F scanning appears to be a very sensitive indicator in detecting bone tumor.