

Number: 11138

Title: Usefulness of percutaneous core needle biopsy in the diagnosis of bone tumor

Yoshikuni Mimata¹, Jun Nishida², Hiroshi Tada¹, Minoru Doita¹

1 Department of Orthopedic surgery, School of medicine, Iwate Medical University

2 Department of Orthopedic surgery, School of medicine, Tokyo Medical University

Background and Purpose: Percutaneous core needle biopsies (CNBs) generally have been performed in the investigation of a suspected bone tumor instead of surgical biopsies at our institution. The aim of this study was to evaluate the safety, effectiveness and accuracy of this technique.

Patients and Methods: Five hundreds and thirty-four percutaneous CNBs were undertaken between January 1998 and December 2013 to make histological diagnoses. Transpedicular vertebral body CNBs were undertaken for spinal lesions (from T1 to L5 vertebral body lesions). The biopsies were carried out under local anesthesia except for the children, who underwent the biopsies under general anesthesia. Biopsy specimens were obtained by passing 8 or 11 gage needle biopsy instruments into the target site of the lesion using C-arm fluoroscopy percutaneously. The specimens obtained were histologically analyzed. The accuracy of CNBs was confirmed by the clinical course and response to the treatment or comparing the histological findings between the biopsy specimens and the surgical specimens or additional biopsies.

Results: The pathologic evaluations were definitive in 500 (93.6%) patients including normal 51 (10.2%) cases, and not diagnostic in 34 (6.4%) patients after the initial CNBs. In the definitive 449 patients except for normal 51 cases, the diagnoses were metastatic neoplasms in 190 (38%) patients, primary bone tumors and tumor-like lesions in 171 (34.2%) patients, hematopoietic malignancies in 29 (5.8%) patients, the others including infection, inflammation and osteoporotic fractures in 59 (11.8%) patients. In the not diagnostic 34 patients, the diagnoses were established in 9 of these patients after second CNBs, the diagnosis was established in 4 of them by additional CT-guided needle biopsy, 3 of them were diagnosed as multiple bone malignancies after biopsy of the other bone lesions and 15 of them were diagnosed from specimens after resection. Nineteen of 34 patients (55.9%) who were not diagnosed at the initial procedures were finally diagnosed of having malignancies. Fifty-one patients, whose diagnoses were normal, were followed-up for more than 1 year, and none of them suffered from any kind of illness at that region. There were no post-procedure complications.

Conclusion: In this study, diagnoses were established in 500 of 534 patients (93.6%) at the initial CNBs for the lesions occurred in the extremities, trunk and spine. This result suggested that percutaneous CNB is a safe and useful procedure to distinguish the benign lesions from malignant tumors and to decide a therapeutic strategy.