

PERCUTANEOUS TRANSPEDICULAR BIOPSY FOR VERTEBRAL LESIONS

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ABSTRACT :

Percutaneous transpedicular biopsy technique was performed for five cases of vertebral pathology. Under C-arm fluoroscopic control, the Kambin instruments were used for the procedure.

In the operation room, the patients were biopsied under local anesthesia supplemented with light neuroleptic analgesia. Of the biopsies, two were metastatic disease, one was plasmocytoma, one was tuberculosis and one was non specific infection.

Key Words: Biopsy, percutaneous, spine, transpedicular

INTRODUCTION

Closed skeletal biopsy has many advantages over open incisional biopsy and, is widely used. Some of the vertebral lesions such as Pott's disease are easy to diagnose and, decide to perform the definitive operation without a biopsy. On the other hand, there are many lesions when there is a suspect of primary or metastatic lesion of the vertebral column, one must hesitate to operate the patient prior to biopsy which is technically difficult but less time consuming and having less morbidity. The advantage of using the percutaneous route is to keep the pathology within the compartmental place with a minimum of tumor cell spillage until the definitive procedure is performed.

MATERIALS AND METHODS

Five cases of vertebral pathology with unknown origin were biopsied in the operating room. The patient is placed in the prone position and readied for C-arm image display. Kambin instruments were used for the procedure (6). After local anesthetic infiltration with an 18 gauge needle. Then the needle is withdrawn. A specially designed cannulated blunt trocar is passed over the K-wire until the trocar reaches the pedicle (Fig. 1). A cannula is then passed over the blunt trocar and is held firmly in the pedicle while the blunt trocar is removed. Under radiographic control, the straight and/or curved forceps are introduced through the cannula into the corpus of the vertebra to evacuate the biopsy material (Fig. 2). It is also possi-

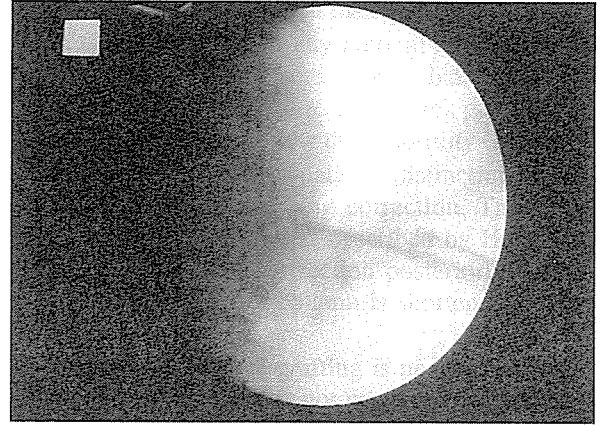


Fig. 1. Cannulated blunt trocar is passed over the K-wire

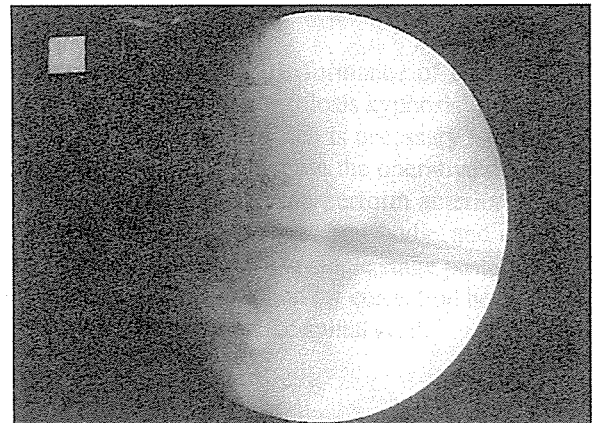


Fig. 2. Forceps is introduced through the cannula into the corpus.

ble to aspirate some material with a Luer-Lok syringe fitted to cannula or the cutting instrument for cytology.

RESULTS

Of the biopsies, two were metastatic disease (L1 and L2 level), one was plasmocytoma (L2), one was tuberculosis (L3) and one was non specific infection (L4). We did not observe any complications.

DISCUSSION

Percutaneous bone biopsy was first described by Coley and coworkers in 1931 (2). With the never imaging techniques like CT scanning, high quality nuclear among the spine surgeons. Spinal column is one of the most frequent place where an orthopedist is asked to confirm metastatic disease in a patient with a known primary tumor. Either a percutaneous or an open biopsy is performed. Percutaneous biopsy is performed with minimal preoperative medication and local anesthesia and, almost painless procedure. A percutaneous biopsy may be performed with either a large biopsy needle such as a turner (11), Ackermann (1) or Craig needle or, a small 22 or 23 gauge needle (3). In our study we used Kambin instruments that was originally designed for percutaneous discectomy (6). The size of the needle should in part be determined by the amount of tissue needle for diagnosis and in part by the accessibility of the lesion to be biopsied. In the cervical and dorsal spine small needles are recommended. All our patients had lesions of the lumbar spine so Kambin instruments were suitable in size for the procedure.

The reported accuracy rate for performing percutaneous bone biopsies varies. Tehranzadeh (10) had a 75%, Mink (7) 95% success rate. Although our study group is small in number, we observed a 100% rate of accurate diagnosis. The complications encountered after biopsy of vertebral lesions are potentially more serious. Fyfe and coworkers (5) reported of neurologic complications and Mink (7) 0.7% of hemorrhage either during or after the biopsy. Murphy and coworkers (8) after reviewing the literature, reported a 0.2% complication rate in over 9500 procedures with two deaths and four cases of permanent neurologic dysfunction. The procedure can be technically demanding especially in the thoracic spine but is safe when performed by a physician experienced in using the proper technique, instruments, and radiographic control (4). Our technique is a little different than the classic percutaneous

biopsy because we always preferred to enter the vertebral corpus by the transpedicular route. Fidler (4) although his approach was open transpedicular instead of percutaneous, advocated that transpedicular penetration to the corpus minimises the danger of contamination of tissue planes and spaces. Stringham and coworkers (9) performed 9 percutaneous transpedicular biopsy and declared that this technique is less invasive, safe, less morbid, rapid and cost effective. They also added that the caliber of the pedicle accommodates biopsy instruments that are able to access any vertebral body lesions and retrieve sufficient tissue for diagnosis. The advantages of transpedicular route were, lessening the complications such as hemorrhage and nerve root lesions and also to be sure that biopsy is made directly from the vertebral corpus.

CONCLUSION

Percutaneous transpedicular biopsy technique is a safe, efficient procedure for establishing or excluding primary or metastatic malignancy in patient with known or suspected cancer in an experienced spine surgeons hands. This technique spares the patient a major operation with regional anesthesia.

REFERENCES

1. Ackermann W. Vertebral trephine biopsy. *Ann Surg.* 143:373, 1956
2. Coley BL., Sharp GS., Ellis EP. Diagnosis of bone tumors by aspiration. *Am J. Surg.* 13:215-224, 1931
3. Debnam JW., Stable TW. Needle Biopsy in bone in the cancer patient. *Radiol Clin North Am* 13:157-64, 1975
4. Fidler WF. Open transpedicular biopsy of the vertebral body. *J Bone Joint (Br)* 72B: 884-5, 1990
5. Fyfe IS., Henry APS., Mulholland RC., Closed vertebral biopsy. *J Bone Joint Surg.* 65B:140-3, 1983
6. Kambin P., Sampson S. Posterolateral percutaneous suction-excision of herniated lumbar intervertebral discs: Report of interim results. *Clin Orthop* 207:37, 1986
7. Mink J. Percutaneous bone biopsy in the patient with known or suspected metastases. *Radiology* 161:191, 1986
8. Murphy WA., Destouet JM. Gilula LA. Percutaneous skeletal biopsy: A procedure for radiologist-results, review and recommendations. *Radiology* 31:204, 1981
9. Stringham DR., Hadjipavlou A., Dzioba Rb., Lander P. Percutaneous transpedicular biopsy of the spine. *Spine.* 19: 1985-91, 1994
10. Tehranzadeh J., Freiberg RH., Ghelman B. Closed needle biopsy:review of 120 cases. *AJR* 140:113-115, 1983
11. Turner JW., Jaffe Hl. Metastatic neoplasms. A clinical and roentgenological study of involvement of skeleton and lungs. *AJR* 43:479, 1940