

Supplement 4, 1999

Journal of Surgical Oncology



WILEY-LISS

This journal is online
Interscience®
www.interscience.wiley.com

ISSN 0022-4790

Biopsy of musculoskeletal tumors: its key role between diagnosis and treatment.

G. Cannata, G. Monteleone, U. Tarantino

University of Rome "Tor Vergata", Orthopaedics and Traumatology, Director M. Monteleone

In tumors of bone and soft tissues of the musculoskeletal system, biopsy has the critical task to provide sufficient tissue for histologic diagnosis and correct staging without compromising treatment. Often underestimated in standard textbooks and in surgical practice, it should be planned as carefully as the definitive procedure and performed with appropriate consideration in order to minimize its potential hazards.

The two principal methods of obtaining a musculoskeletal biopsy are closed biopsy, either fine needle or trocar, and open biopsy, either excisional (removing the whole tumor macroscopically appreciable) or incisional (taking a sample); permanent and frozen sections may be carried out. Each method has advantages and disadvantages, anyhow it should be planned following the completion of imaging techniques. Closed biopsy is relatively less invasive and its short healing time allows an early start of any adjuvant preoperative treatment. On the other side, it provides only a limited amount of tissue which is often insufficient and potentially altered by squeeze artifacts. This kind of biopsy shows considerable limitations in bone tumors, whose histologic diagnosis needs a great deal of experience even with ample amounts of tissue; it proves more accurate in soft tissue tumors and is useful for pure confirmation of local recurrence of a previously known tumor. Excisional biopsy must be confined to lesions ascertained as benign by clinical, radiographic and intraoperative findings. In all the other cases incisional biopsy is preferable and should be performed following well-established rules. The biopsy incision should follow the line of the incision of the definitive procedure: in the extremities it should be placed longitudinally, in other sites it should follow the major axis of the underlying muscles. If an amputation is a likely outcome, the biopsy incision should not interfere with the flap design. The tumor should be approached directly through muscles rather than along the intermuscular planes of traditional orthopaedic surgery, which may enhance tissue contamination. Major neurovascular bundles should be avoided. Meticulous hemostasis is mandatory and drainage should not be placed. If a bone window is to be performed, it should be as small as possible and without sharp corners which could act as stress risers predisposing to pathologic fracture. The residual intraosseous cavity may be plugged with methylmethacrylate or wax for bone hemostasis. Biopsy shortly after fracture should be avoided, because necrosis and hemorrhage may preclude diagnosis; moreover, healing callus may distort the histologic picture. Both needle biopsy and open biopsy require subsequent "en bloc" removal of scar and tract together with the tumor at the time of the definitive procedure.

For these reasons biopsy is recommended to be carried out by the same surgical staff who will perform the definitive procedure. There are still many examples of treatments compromised by biopsy complications: these problems are more common if biopsy is performed in a referring institution rather than in a treating center. They include an amount of tissue inadequate for definitive diagnosis, diagnostic errors, excessive contamination of previously uninvolved tissues, infection, fracture and biopsy incision placed in such a fashion as to jeopardize the definitive surgical treatment up to convert a local procedure into an amputation.

FIBROUS DYSPLASIA: LONG-TERM FOLLOW-UP OF 14 PATIENTS TREATED SURGICALLY OR CONSERVATIVELY**F. De Maio***, **F. Mancini***, **D. Perugia****, **P. Farsetti*****

* Clinica Ortopedica, Università degli Studi di Roma "La Sapienza"

** Cattedra di Clinica Ortopedica, Università degli Studi di Roma "Tor Vergata"

*** Cattedra di Chirurgia della Mano, Università degli Studi di Roma "Tor Vergata"

Fibrous dysplasia is a benign pathological condition characterized by widening of the affected bone, with cortical thinning, and by the presence of osseofibrous tissue with islands of cartilage.

We reviewed, from a clinical and radiographic point of view, 14 patients affected by fibrous dysplasia with an average follow-up of 11.3 years. Eight patients were male and 6, female. Their age at diagnosis ranged from 4 to 42 years. In 10 cases the disease was monostotic and in 4, polyostotic. The diagnosis was made through open biopsy in all cases. In 4 cases the diagnosis was made after the end of skeletal growth, while in 2 cases the disease was diagnosed occasionally. Ten patients were treated surgically. Treatment consisted of curettage and bone grafting in 4 cases, preventive internal fixation with intramedullary nailing in 4 cases, resection and vascularized fibular grafting in one case and corrective osteotomy in one case. In 4 cases fibrous dysplasia recurred, and a second operation was performed.

At follow-up two patients had pain and restricted range of motion, 3 patients presented leg length discrepancies of the lower limb measuring from 2 to 5 cm, and 7 patients had muscular hypotrophy from 2 to 5 cm. Radiographically the lesion was still present at follow-up in all cases, although in 9 patients the final X-rays showed a moderate remodelling of the dysplastic area.

The authors believe that the incidence of fibrous dysplasia is still unknown; moreover, the lesion can get worse even after the end of skeletal growth. The surgical treatment of curettage and bone grafting should be reserved to small lesions localized in an area where fractures are likely to occur. Preventive intramedullary nailing is recommended in wide lesions with a high risk of fracture, whereas resection of the dysplastic area and vascularized fibular grafting should be considered for wide lesions with pluricyclic aspect.

1. Harris WH, Dudley HR Jr, Barry RJ (1962). The natural history of fibrous dysplasia. An orthopaedic, pathological and roentgenographic study. *J Bone Joint Surg* 44-A: 207-233
2. Guille JT, Kumar SJ, MacEwen GD (1998). Fibrous dysplasia of the proximal part of the femur. Long-term results of curettage and bone-grafting and mechanical realignment. *J Bone Joint Surg* 80-A: 648-658

TROCAR BIOPSY CT SCAN CONTROL IN THE SPINEA. Gasbarrini^o, M. Risi^o, L. Campanacci^o, S. Boriani^o,
A. Ziosi*^o *Divisione di Ortopedia e Traumatologia** *Servizio di Radiologia 2**Ospedale Maggiore Bologna*

The aim of this study is to report our experience on the technique of trocar biopsy CT-guided in the vertebral lesions.

During 1 year (1998) in 19 cases of osteolysis, localized in the vertebra, biopsy was performed.

The average age of patients was 59 years (in a range from 14 to 78 years).

Location of the lesion was in T8 and T10 in 1 case, T11, L1 and L5 in 2 cases, L3 and L2 in 3 cases, and L4 in 5 cases.

All patients presented pain, 3 with pathologic fractures, and 1 with neurologic deficit.

Procedure consists of CT-images of the damaged, the upper and lower vertebrae. After having found the searched-for image, in local anesthesia, a trocar needle of 4 cm of diameter has to be inserted into the lesion, possibly passing into the pedicle of the vertebra.

The specimen is sent to histological examination. If there is a suspicion of discitis, a cultural examination is also required.

In all cases, where we proceeded in this way, we had always obtained diagnosis: in 11 cases we found metastases, in 6 cases there were infections and in 2 case primitive tumors (1 osteoblastoma and 1 cordoma).

This is a rather simple way of making biopsy, well accepted by the patient, easy to perform in day-surgery and it allows to obtain a correct diagnosis through a minimal invasive approach, easily excisable with the tumor during the definitive procedure for cases of primitive tumors.