

METHOD OF INTRAVITAL BONE MARROW PUNCTURE IN SMALL LABORATORY ANIMALS

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A method of intravital bone marrow puncture has been developed for use in mice, rats, and guinea pigs to enable these animals to be used for chronic hematologic experiments.

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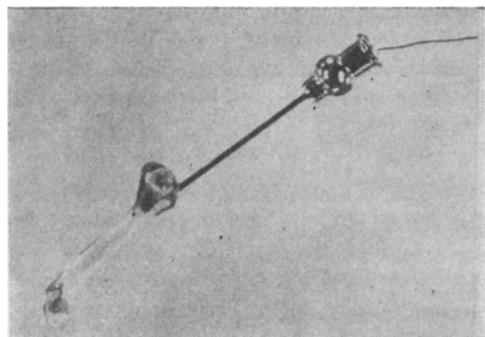


Fig. 1. Needle inserted into medullary canal.

Bone marrow is extracted under ether anesthesia. To puncture the femur, needles 0.5 mm in diameter are used for mice and needles 1 mm in diameter for rats and guinea pigs. The skin in the region of the knee joint is painted with 10% tincture of iodine. The animal's limb is flexed at the knee, and the needle with stilet is inserted into the joint cavity from in front, the needle being placed in line with the animal's femur (Fig. 1). The point of the needle must rest against the articular surface of the distal end of the femur, against the small area of bone between the four condyles. The needle is then pushed into the medullary canal by a few twisting movements, and the stilet is removed.

To aspirate the medullary contents a 5- or 10-ml syringe can be used. Clotting of the marrow extracted is prevented by preliminary treatment of the syringe and needle with physiological saline containing 5 units heparin/100 ml solution.

If the puncture is carried out for diagnostic purposes, it is sufficient to use a very small quantity of marrow to make the film, not more than the volume of the puncture needle canal. If puncture is carried out to extract as many hematopoietic cells as possible, 0.1 ml of marrow can be obtained by several aspiratory movements of the syringe from a mouse and 0.4-0.5 ml from a rat, the number of extracted nucleated cells constituting 50-60% of their total number present in the femur.

Laboratory animals tolerate the puncture well, and no complications were observed. However, when very large quantities of marrow are extracted, changes may develop in the blood system (transient anemia, leukocytosis). Intravital diagnostic puncture is a simple research technique taking not more than 1-2 min to perform by a skilled operator.

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