

EDITORIAL

MARROW BIOPSY TECHNICS

DESCRPTION by Loge in this issue of the spinous process aspiration biopsy of the marrow brings to mind the great development in the use of the marrow puncture as a diagnostic aid in hematologic problems. Although marrow biopsies had previously been occasionally performed, it remained for Seyfarth in 1923 to introduce the sternal approach. The marrow cavity was entered by means of a small trephine and sections of the button of bone, together with curettings, made directly from the marrow cavity were obtained. Arinkin's method of puncturing the sternum by means of a stiletted needle and aspirating a small amount of marrow material proved far more flexible and readily adapted to the clinic. Numerous needles and methods of handling the aspirated material have been recommended, but it is likely that the simplest needle and the least handling give the best results, providing that a small amount of material (no more than 0.5 cc.) is aspirated. The sternal puncture has in many respects revolutionized diagnostic hematology, so much so that in many clinics, a case is considered inadequately studied if the marrow puncture has not been performed.

The marrow puncture finds its greatest diagnostic use in conditions of pancytopenia, in splenomegalic disturbances, and in thrombocytopenia. Pancytopenia is more often due to aleukemic leukemia, multiple myeloma, and lymphosarcomatosis than to hypoplasia and aplasia of the marrow. The diagnosis of the leukocytic neoplastic diseases as they invade the marrow is usually readily made by marrow puncture, even when the blood picture is completely noncontributory. This is particularly true of multiple myeloma. In many conditions with splenomegaly, the marrow puncture may be distinctly helpful, as for example, in Gaucher's disease, lymphosarcoma, and the hyperplastic marrow as seen in hypersplenism, etc.

In thrombocytopenic purpura, marrow aspiration is almost obligatory, since in no other way can one be sure that the megakaryocytes are present in normal, increased, or decreased numbers. To remove the spleen when the marrow megakaryocytes are greatly lacking or altogether absent is to invite disaster. Splenectomy should be performed only when it seems reasonably certain that the disorder is idiopathic or hypersplenic and when the megakaryocytes are present at least in normal numbers.

Dry marrow taps are occasionally encountered. This occurs not only with fibrotic marrows but occasionally in the extremely cellular marrows of certain cases of aleukemic leukemia. Under such conditions, it may become necessary to perform a trephine biopsy. In our clinic such necessity occurs very infrequently, perhaps once in fifty punctures. The trephine biopsy gives topographic relationships of marrow to bone, extent of fibrous tissue, etc., but from the standpoint of studying cellular histology, the direct sternal aspiration is unsurpassed. Furthermore, good sections can be made from aspirated material by appropriate fixation.

The need for performing the relatively difficult trephine biopsy has dwindled even more as new avenues for approaching the marrow have been introduced.

Puncture of the iliac crest was introduced a few years ago by Van den Berghe of Belgium and its use emphasized in this country by Rubinstein. Spinous process punctures were apparently first described by A. C. and C. L. Heidenreich in an Argentinian article in 1936, and the Belgian De Weerdts testified as to the good results obtained by this method. The Japanese had evidently been using the spinous process puncture for a number of years before our medical officers in the Pacific learned of it. As stated by Loge this method has a number of advantages. The patient lies on his abdomen without any exact perception of what is going on; the needle does not go over his "heart," and as a result, there is far less psychic trauma. In addition, the spinous processes are so numerous that serial studies in such conditions as idiopathic thrombocytopenic purpura can readily be made. The method may also be used in infants and very young children, in whom sternal puncture is often quite difficult. The advantage of having at least three sites to puncture has already proved itself in a number of cases in our laboratory. For example, it seemed reasonably certain that a recent patient with splenomegaly, pancytopenia, and a high sedimentation rate had lymphosarcomatosis. Sternal and iliac crest punctures were both extremely hypocellular and unhelpful but the spinous process puncture showed almost a pure culture of lymphoblasts, thus not only making the diagnosis, but foregoing the need for performing a trephine biopsy. Preliminary observations in our laboratory of some 30 comparative sternal, vertebral, and iliac crest punctures indicate that the results are very similar from one site to another and that if there is failure by one method success may be obtained with another.

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