Short Communication

No Narcosis for Bone Marrow Harvest in Autologous Bone Marrow Transplantation

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Summary. A prospective study with mild general analgesia and sedation together with local anesthesia during bone marrow harvest was performed. Thirty-one patients underwent 33 bone marrow collections. Pretreatment consisted of 100 mg meperidine i.m. and 20 mg diazepam i.m. 1 h before start of procedure. Eight patients got additional meperidine and diazepam during the procedure, all patients got lidocaine 1% locally. A mean volume of 1.32 l was obtained with 42.5 punctures. Twenty-two patients had no complications, 4 vomited, 4 had easily correctable hypotension of short duration, one got oxygen for cyanosis of short duration. Acceptance was good in 23 patients, in 6 reasonably well, in 2 bad. Only one patient experienced pain problems, due to suction. Anxiety was no major problem due to good information before the procedure and mild sedation.

This form of anesthesia for bone marrow collection is a safe procedure, it is generally well accepted by the patient and it can be performed on an out-patient basis.

Key words: Bone marrow transplantation – Local anesthesia

In general bone marrow collection for bone marrow transplantation is performed under general or epidural anesthesia [1, 5]. Buckner et al. found in their group of 1000 donors frequent non-life threatening complications like postoperative fever, urinary retention, “spinal” headache and trauma to the posterior pharynx. Four life-threatening problems occurred [2].

Patients eligible for autologous bone marrow transplantation are often in a worse general condition than healthy bone marrow donors. For this reason we started a prospective study to evaluate the feasibility of bone marrow harvest under mild general analgesia and sedation together with local anesthesia.

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Patients and Methods

From February 1982 till December 1983, 33 bone marrow collections were performed in 31 patients. In 2 patients marrow was harvested twice. Of the 23 males and 8 females, mean age 37.7 years (range 19–60 years), 7 had a non-seminomatous testicular carcinoma, 5 ovarian carcinoma, 16 small cell carcinoma of the lung, 2 breast carcinoma, 1 malignant fibrohistiocytoma.

Initially the patients were admitted to the hospital one day before the bone marrow collection and dismissed the day after the procedure. Recently we started to do the whole procedure on an out-patient basis. The patient stays in the hospital only at the day of the marrow sampling. The procedure was performed in a special room, normally used for diagnostic procedures in the Department of Internal Medicine. The procedure was done by two internists, one working on each side of the patient, and a nurse, while another nurse observed the patient. As medication the patients received meperidine i. m. and diazepam i. m. 1 h before the procedure. If necessary the patient got additional medication during the procedure. Bone marrow was obtained from the posterior iliac crests and all patients got lidocaine locally during the whole procedure. During and after the procedure 2 units of leukocyte free red blood cells and 1 or 2 units leukocyte free full blood were administered to compensate the aspirated marrow volume.

Disposable Illinois bone marrow aspiration needles (Kormed Inc.®), without guard, were used. The marrow was aspirated into plastic 20 ml syringes. By fitting the syringes in pistols (Cameco®) the bone marrow suction was greatly facilitated. During the procedure nucleated cells in the bone marrow were calculated, with correction for nucleated cells of the peripheral blood. The volume necessary to give $2 \times 10^8$ nucleated cells/kg bodyweight was collected.

After the procedure and after discussion with the patient an evaluation form was filled in by the physician. The acceptance was described as the tolerance by the patient of the procedure as a whole. Specific problems like pain or anxiety and possible causes of these, were noted separately.

Results

As premedication 100 mg meperidine i. m. and 20 mg diazepam i. m. were given. Twenty-two patients needed no additional drugs. Eight got additional meperidine i. m. (53 mg mean) and 6 diazepam i. m. (16 mg mean). Lidocaine 1% (mean 39 ml) was injected locally.

Mean duration of the procedure was 1 h 40 min (range 1 h 5 min – 2 h 45 min). Due to heavy pretreatment large volumes of bone marrow (mean 1.32 l, range 0.8–2 l) had to be obtained. A mean of 42.5 punctures were performed, with each puncture there was sucked up at two or three levels.

No complications occurred in 22 patients. Four vomited, and 4 had hypotension of short duration. The hypotension was clinically due to a vasovagal collapse and could easily be managed by increasing intravenous plasma infusion or atropine injection. Another patient, in whom bone marrow was collected twice, had peripheral cyanosis and got oxygen.

Acceptance was good in 23 patients, which means that a lot of patients were able to have a drink, talk or sleep during the procedure. Six patients accepted the procedure reasonably well and 2 badly. Of the patients who vomited, 3 had good acceptance, 1 reasonably well. The one patient with peripheral cyanosis had bad acceptance, but preferred this form of anesthesia for his second bone marrow collection and refused general anesthesia. In the other patient with bad acceptance the procedure was terminated within 10 min because of pain during suction and later bone marrow sampling under general anesthesia was performed. Only in this last patient pain, due to suction was a real problem. Anxiety during the procedure was not a major problem, probably due to the good information before the procedure and mild sedation.