Bone Marrow Biopsy and Aspiration

Note: The information below is a general guide only. The arrangements, and the way tests are performed, may vary between different hospitals and doctors. Always follow the instructions given by your local hospital or doctor relating to any test or procedure.

Bone marrow tests are mainly used to help diagnose and assess various blood disorders.

What is bone marrow, biopsy and aspiration?

- **Bone marrow** is the spongy tissue and fluid which is inside some of the larger bones in the body. The marrow is where you make red blood cells, white blood cells, and platelets from cells called 'stem cells'.
- **A biopsy** is when a small sample of tissue is removed from a part of the body. The sample of tissue is then examined under the microscope to look for abnormal cells, and may also be tested in other ways.
- **Aspiration** means removing some fluid. In this example it is the removal of a sample of bone marrow fluid which can be looked at under the microscope or tested in other ways.

Who has a bone marrow biopsy and aspiration?

There are a number of reasons why you may be advised to have these tests. For example, they may be done to:

- Find the reason for a low number of red blood cells (anaemia), a low number of white blood cells (leucopenia), or a low number of platelets (thrombocytopenia) in the blood. Also, to find the reason for a high number of these types of blood cells. A number of conditions can cause these blood abnormalities such as:
  - various types of leukaemia.
  - various other types of blood disorders.
- Monitor the response of treatment for leukaemia.
- Determine how far certain lymphomas or cancers have progressed.

How are these tests done?

Bone marrow samples are usually taken from the top of the pelvis bone. This is the bone that you can easily feel just below each side of your waist. Occasionally, other large bones are used such as the sternum (breastbone).

You will be asked to lie on a couch on your stomach or your side depending on the exact site the doctor chooses to use. The skin over the bone to be sampled is cleaned with antiseptic.

Some local anaesthetic is then injected into a small area of skin and tissues just over the bone. This stings a little at first, but then makes the skin numb. Some people are given a sedative before the procedure.

- **To aspirate bone marrow fluid** a needle is pushed through the anaesthetised skin into the bone. A syringe is used to draw out some liquid bone marrow. As the liquid is withdrawn, your may have a brief, sharp pain in your bone (and into the buttock and leg if the pelvic bone is used).
- **To biopsy the bone marrow** a second, thicker, hollow needle is inserted into the bone. This is rotated around as it is pushed slightly forward to force a small sample of bone marrow into the hollow middle of the needle. This may cause some dull pain for a short time. The needle is then taken out and a pressure bandage applied to prevent bleeding.

After the test

- You will need to lie on a bed and be observed for an hour or so to check you have had no serious bleeding.
- You may have some discomfort and bruising over the test site for a few days which you can ease by taking painkillers.
- The doctor or nurse should tell you how long the results of the tests will take to come back.
- If you have had a sedative you will continue to feel drowsy for several hours. If you are going home after the test and you have had a sedative:
    - Someone should accompany you home.
    - You should not drive or operate any machinery that needs your careful attention for the rest of the day.
    - If you live alone, it is best that someone stays with you overnight.

What preparation is needed before the test?

- You may need a blood test shortly before these tests to check how well your blood will clot. This is to make sure that you are not likely to bleed much from the biopsy site.
- If you take medicines that affect blood clotting such as aspirin or warfarin you may be advised to stop taking these, or to reduce the dose, for one week before the test. (You may need to discuss your medication with your doctor if you take such medicines for other conditions.)
- Tell your doctor if you have previously had an allergic reaction to local anaesthetic.
- You may need to sign a consent form at some point before the procedure to say that you understand what it involves, and the small risk.

What are the risks of bone marrow biopsy and aspiration?

Complications are uncommon. In a small number of cases, there is some bleeding from the biopsy site. This is usually minor, and soon stops. Occasionally, the bleeding is more severe, and rarely it requires a blood transfusion to deal with it. There is a small risk that the small wound will become infected after the biopsy. Rarely, the biopsy needle damages other nearby structures.

 Updated: February 2006

Comprehensive patient resources are available at www.patient.co.uk