Heparin, Questions and Answers

WHAT IS HEPARIN?

Heparin is an *anticoagulant* drug. Anticoagulants are medicines that keep your blood from clotting as easily as usual. There are 2 kinds of Heparin:

- Unfractionated Heparin
- Low Molecular Weight Heparin (*LMWH*).

HOW DOES HEPARIN WORK?

When blood clots, it turns from a liquid into a solid. Blood clotting keeps the body from losing too much blood from wounds, burns, or at the time of delivering a baby. *Anticoagulants* are often called blood thinners. But what they actually do is increase the time it takes a blood clot to form.

WHEN IS HEPARIN USED?

Anticoagulants are used to treat conditions that cause unwanted blood clots. Blood clots can cause many problems, including:

- Stroke. This blocks blood flow to the brain.
- Blockage of veins or arteries in the legs or in organs such as the lungs and kidneys.

Anticoagulants are also used during surgeries (such as open-heart surgery) to prevent clotting. The right amount and type of anticoagulant can prevent many problems. At the same time, there is a need for a careful balance between preventing clotting and causing unwanted bleeding.

Heparin and LMWH are used in hospitals or clinics because they work right away. But they can have serious side effects if used for more than a few weeks. In the hospital, these drugs are used:

- During heart valve surgery.
- After hip replacement surgery.
- For serious cases of blood clots and heart attacks.

When giving Heparin or LMWH in the hospital or when giving LMWH as an outpatient, there may be a need for regular blood tests.

HOW IS THE EFFECT OF HEPARIN/LMWH MONITORED?

The goal of Heparin therapy is to lessen the clotting tendency of blood, but not to prevent clotting completely. The effect of Heparin on the blood's ability to clot must be watched carefully using laboratory blood tests.

The anticoagulation effect of unfractionated Heparin can be reliably monitored by a blood test. It is called the activated partial thromboplastin time (*aPTT*). This test is widely available, and results come quickly. The higher the *aPTT*, the greater the chance for side effects of bleeding (see below).

The anticoagulation effect of LMWH is not reflected by the aPTT. Monitoring LMWH activity requires getting a blood test called an *antifactor Xa level*. This test is not easily available and has a longer time before results come back. Despite this, periodic monitoring as recommended by your caregiver may be suggested if LMWH is given during pregnancy (see below). Routine monitoring for non-pregnant patients is usually not needed.

WHAT ARE THE SIDE EFFECTS OF HEPARIN?

- Bleeding (*hemorrhage*) from too much *anticoagulation* can happen in any part of the body. Patients on Heparin/LMWH should report any falls or accidents, as well as signs or symptoms of bleeding or unusual bruising. Signs of unusual bleeding may include:

- Bleeding from the gums.
- Bloody or dark stool.
- A nosebleed.
- Vomiting of blood.
- Blood in the urine.

- Other body systems can be affected by Heparin. In addition to bleeding, patients can develop thinning of the bones (*osteoporosis*) over a long period of time. In the blood, there is also a rare chance that levels of a blood component important for clotting (*platelets*) can become too low.
- An advantage of LMWH over unfractionated Heparin is that all of the side effects noted above are less frequent.

HOW IS HEPARIN USED IN PREGNANCY?

Pregnant patients have 5 times the risk of developing blood clotting problems (such as blood clots in the legs) compared to non-pregnant patients. **Giving an anticoagulant (either Heparin or LMWH) to a pregnant patient must be considered** if the patient:

- Develops a blood clot while pregnant.
- Becomes pregnant while being treated for a blood clot.
- Has a past history of having a blood clotting problem that had no specific cause (such as from trauma).
- Has a known hereditary problem that pre-disposes to blood clotting problems.
- Has certain known diseases affecting ligaments, tendons, skin, and other "connecting" tissues (*connective tissue diseases*).

Treatment with LMWH has the advantages of:

- More convenient dosing.
  - It is given as a shot once a day rather than through an IV that may be required for Heparin.
- Longer lasting effects.
- Frequency of monitoring is less than that required for unfractionated Heparin.

Unfortunately, there are also possible disadvantages to LMWH. The longer lasting effect could contribute to a bleeding problem if one develops. This includes a concern about bleeding when an anesthesiologist is asked to give a patient epidural anesthesia during delivery. Many anesthesiologists are hesitant to give this type of anesthesia if the patient has gotten LMWH within 24 hours of the time of delivery. In addition, the effects of LMWH are not completely reversible with the drug (called *Protamine Sulfate*). It can reverse the effect of unfractionated Heparin though. LMWH is also a lot more expensive than Heparin. Currently, both the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine endorse the use of LMWH in pregnancy with appropriate counseling.

LMWH should NOT be used in a pregnant patient who has:
(1) A blood clot in the lung (*pulmonary embolism*).
(2) A mechanical heart valve.

HOW IS HEPARIN/LMWH TREATMENT STARTED?

For patients who are being treated in the hospital, unfractionated Heparin may be started first. After getting the full effect of unfractionated Heparin, there may be a switch to LMWH. LMWH can be continued once a day at home after you receive detailed instructions on how to give the shot.

LMWH is given once a day for patients who:

- Are starting preventative treatment.
- Have a condition not requiring treatment in the hospital.

You should receive detailed instructions on how to give the shot prior to treatment.

Your caregiver is the best resource for important information related to your particular case.

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