

## **Radium-223 Dichloride**

### **I. Introduction**

Radium-223 dichloride is a radioactive drug that is administered through a vein into the body and then taken up by fast-growing bone. The radiation given off kills the tumor cells that have spread to the bone. As radium-223 releases a type of radiation that travels a very short distance, most of the effects of the drug are limited to the bone, and the risk for radiation exposure to other organs is low. It is indicated for the treatment of cancer patients with symptomatic bone metastases and no known visceral metastases.

In general, the administration of radioactive drugs involves a potential risk for third parties (people other than the patient), such as radiation coming from the patient's body and contamination due to spilling of the patient's bodily fluids, urine or faeces. As the type of radiation from radium-223 only travels a short distance within the patient's body, the risk for external radiation exposure to others is very low. In addition, any radium-223 in the patient's stool or urine does not present a significant risk to others if standard hygiene measures are followed. However, in the event of death, cremation may be denied by health authorities or may be deferred for a period of time depending on residual radioactivity.

### **II. Procedure**

Radium-223 dichloride is administered through slow injection into one of your veins. It is given once every four weeks for up to six cycles.

### **III. Risk and Complication / Side Effects**

Side effects may include, but are not necessarily limited to the ones listed below. Each patient reacts differently and may experience none, some, or all of the complications to a varying degree of intensity.

## **A. Early / Short Term Side Effects**

These may occur during treatment, but usually disappear within a few days to several weeks later.

### **Common**

1. Decreased appetite
2. Nausea and vomiting. Try small, frequent meals and maintain a balanced diet. Avoid spicy and greasy foods. Drugs will be given to alleviate the symptoms.
3. Abdominal pain and diarrhoea (usually mild). Avoid dairy products, greasy foods and foods with high fibre content during diarrhoea. Maintain fluid intake. Anti-motility drugs can be prescribed if needed.
4. Peripheral oedema
5. Lowering of blood platelet counts which may increase the risk of bleeding. This is usually mild. Report to your doctor if you notice easy bruising, blood in stool, dark stool, heavy menses or blood in urine.
6. Anaemia

### **Uncommon**

1. Lowering of white blood cell counts which may increase the risk of infection. Seek medical advice immediately if fever occurs. Maintain personal hygiene and nutritional status by a balanced diet. Avoid people who are sick or having a cold, and stay away from crowds and animals. Blood tests will be scheduled to monitor your blood count.
2. Injection site reactions: skin redness, pain or swelling at the injection site.

### **Rare**

1. Allergic reaction resulting in skin rash, shortness of breath and drop in blood pressure. This is potentially life-threatening and may require resuscitation.

## **B. Late / Long Term Side Effects**

### **Uncommon**

1. Ongoing bone marrow suppression leading prolonged reduction in platelet counts, white blood cell counts or anaemia

### **Rare**

1. Radiation-induced tumours may occur, but this is extremely rare

### **Notes:**

- All intravenous injections have a slight risk of pain, bruising, bleeding, infection, and rarely, fainting and/or nerve damage.
- The effect of radium-223 on the patient's fertility is still unknown.
- Serious side effects and complications are uncommon. Their chance of occurrence, clinical presentation and severity vary among patients because of individual differences in the dose of radium-223 received and tissue response to radiation.
- On rare occasions, patients may develop severe life threatening complications due to radium-223 and die.
- It may be possible that the intended treatment outcome cannot be achieved, the disease may not be alleviated and it may recur or progress in the future.
- Our medical staff will strive to ensure that every patient receives the most appropriate treatment with the least side effects. Despite all precautions, unpredictable and unpreventable adverse outcomes may occur after treatment. Please kindly read and fully understand the content above before deciding on undergoing the treatment mentioned.
- If any of the side effects gets serious, or if you notice any side effects not listed in this leaflet, please tell your doctor.

## **IV. Before the Treatment / Preparation**

You may have to stop any calcium or vitamin D supplement at least 14 days before treatment according to instructions of your doctor.

Before each cycle of radium-223 dichloride, blood tests are required.

**Notes:**

- **Radioactive substance can cause teratogenicity. Both male and female patients (if applicable) should take contraceptive measures during the course of treatment and for at least 6 months from last injection. Barrier method of contraception (e.g. condom) is the recommended way. Once pregnancy is suspected, you should inform the doctors or nurses immediately.**
- **Female patients should avoid breastfeeding during and for a period of time after treatment as instructed by your doctor**
- **Please tell your doctor if you have previously received radium-223 in another hospital.**

**V. After the Treatment**

Normal daily activities and contact with family and friends are allowed. Radioactivity may be found in your blood, urine and faeces. The following precautions should be taken after each cycle of treatment for a short period of time as specified by your doctor (usually for 1 week).

1. Keep the toilet clean. Wipe spilled urine, faeces or vomit with tissue and flush away. Flush the toilet twice after each use. Wash your hands with soap in running water thoroughly each time you go to the toilet.
2. Handle any linen or clothing that is stained with urine, blood or faeces separately.
3. Use disposable gloves when wiping urine, blood, faeces or vomit and handling stained clothing.
4. Avoid sexual activity

You should return for blood tests as instructed. These results are necessary for arranging your treatment and monitoring your condition. You should avoid other anticancer drugs, including Chinese herbs that are not prescribed by our doctors during treatment. They may have unpredictable adverse effects. You should consult the doctors before having any vaccination.

## VI. Follow up

A follow-up appointment will be arranged to assess your response to treatment and look out for complications. Please attend your appointment as scheduled and follow the instructions on taking medications strictly.

## VII. Remarks

This is general information only and the list of complications is not exhaustive. Other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. For further information please contact your doctor.