

## **Embolization of Head, Neck and Brain Tumours**

### **Introduction**

The embolization of vascular tumors of the head, neck, and CNS has become an important adjunct to the surgical treatment of these tumors. The procedure has resulted in reduced morbidity and mortality, and helps to facilitate the removal of many of these tumors. In tumors that are not amenable to surgical therapy, embolization may occasionally be used as the primary mode of treatment.

Tumor embolization is defined as the blockage of the vascular supply to a tumor. The blockage is usually performed via an endovascular approach but may also be performed by direct percutaneous injection of embolic agents into the tumor.

The procedure is usually performed in a single session, simultaneously with diagnostic arteriography, but may also be performed in multiple staged sessions.

### **The Procedure**

- The procedure will be performed under local or general anesthesia and aseptic technique.
- The interventionist will puncture a blood vessel at your groin region (mostly right side) with a needle. After the needle is correctly positioned, a slender guidewire is placed through the needle into the blood vessel. The needle is then withdrawn, allowing a fine plastic tube (the catheter) to be placed over the guide wire into the blood vessel.
- Under X-ray guidance, the catheter will be advanced into your neck region and special dye (contrast medium) will be injected through the catheter and X-rays taken.
- Within this catheter, another smaller micro-catheter will be advanced into the carotid artery and then into the vessels supplying the tumor. Embolic agents are then injected via the micro-catheter to block the vascular supply to the tumor. The embolic material could be liquid agents (ethanol, acrylic, Onyx) or particles (polyvinyl alcohol, Gelfoam). Embolic agents may be permanent or temporary.
- All the catheters will be removed at the end of the procedure. Pressure will be applied to the groin region to stop any bleeding. The opening in the skin is then covered with a dressing.
- The duration of this procedure is different for every patient; it depends on the complexity of the condition.
- If the interventionist does not think that he/she can safely embolize the tumor, then the embolization procedure will be discontinued.
- Your vital signs (e.g. blood pressure, pulse) and neurological condition will be monitored during and after the procedure. Attention should be paid on the skin puncture site to make sure there is no bleeding from it.

### **Potential Complications**

- The overall complication rate with tumor embolization is low.
- The combined rate of death and any permanent disabling neurological deficit is below 5%.
- Major complications include:
  - Nerve damage
  - Tissue damage, necrosis or ulcer
  - Stroke
  - Unintended vascular occlusion
  - Retained catheter
  - Contrast media associated nephrotoxicity

- The overall adverse reactions related to iodine-base non-ionic contrast medium is below 0.7%. The mortality due to reaction to non-ionic contrast medium is below 1 in 250,000.
  - Groin or retroperitoneal hematoma requiring transfusion or surgery.
  - Arteriovenous fistula / pseudoaneurysm at puncture site
  - Breakage and knot forming of catheter or guidewire is very rare, this may require surgical removal.
- Minor complications includes:
    - Fever and localized pain
    - Puncture site complications such as groin hematoma, bruise and pain
    - Complications related to contrast medium injected – rash, urticaria.
    - Transient neurological deficit which is reversible within 24 hours (limb weakness, numbness)
    - Transient visual loss
    - Arrhythmia

### Before the Procedure

- Your referring doctor will ask you to sign a consent form for this investigation. You should volunteer information to your doctor on history of allergy to food and drugs, history of asthma, urticaria, eczema and allergy to contrast medium.
- Check any bleeding tendency and correct if possible.
- Fast for 6 hours before the examination.
- Empty the bladder before the procedure.
- Skin preparation of the puncture site.
- During the examination, you are advised to listen carefully to the instructions given by our staff.
- For diabetic patient on drug - consult clinician concerned for the adjustment of insulin dosage if necessary.

### After the Procedure

- After the catheter was removed, the puncture site has to be compressed for at least more than 10mins.
- Continue to watch for evidence of secondary bleeding and swelling at the puncture site.
- Continue to check blood pressure and pulse, or neuro-observation.
- You may need to have bed rest.
- You may need to continue to fast or take diet as tolerated depending on your condition.
- For diabetic patient on drug- consult clinician concerned for the adjustment of insulin dosage if necessary.

### Remarks

This leaflet is intended as general information only. Nothing in this leaflet should be construed as the giving of advice or the making of a recommendation and it should not be relied on as the basis for any decision or action. It is not definitive and the Hong Kong Society of Interventional and Therapeutic Neuroradiology Limited does not accept any legal liability arising from its use. We aim to make the information as up-to-date and accurate as possible, but please be warned that it is always subject to change as medical science is ever-changing with new research and technology emerging. Please therefore always check specific advice on the procedure or any concern you may have with your doctor.