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Information on Embolization of Head, Neck and Brain Tumours

Introduction

1. 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.
2. 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.
3. The procedure is usually performed in a single session, simultaneously with diagnostic arteriography, but may also be performed in multiple staged sessions.

The Operation / Procedure

1. The procedure will be performed under local anesthesia or general anesthesia and aseptic technique.
2. The interventionist will puncture a blood vessel at the 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 The needle is then withdrawn, allowing a fine plastic tube (the catheter) to be placed over the guide wire into the blood vessel.
3. The X-ray equipment will then be used to navigate the catheter into the neck region and special dye (contrast medium) will be injected through the catheter and X-rays taken.
4. 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.
5. 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.
6. The duration of this procedure is different for every patient, it depends on the complexity of the condition.
7. If the interventionist does not think that he/she can safely embolize the tumor, then the embolization procedure will be discontinued.
8. 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.

Before the Operation / Procedure

1. A written consent is required. Inform doctor on history of allergy to food and drugs, history of asthma, urticaria, eczema and allergy to contrast medium.
2. Check any bleeding tendency and correct if possible.
3. Fast for 6 hours before the examination.
4. Empty the bladder before the procedure.
5. Skin preparation of the puncture site.
6. For diabetic patient on drug - consult clinician concerned for the adjustment of insulin dosage if necessary.
7. During the examination, patient is advised to listen carefully to the instructions given by our staff.

After the Operation / Procedure

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

Risk and Complication

1. The overall complication rates with tumor embolization is low.
2. The combined rate of death and any permanent disabling neurological deficit is below 5%.
3. Major complications includes:
   - 3.1 Nerve damage.
   - 3.2 Tissue damage, necrosis or ulcer.
   - 3.3 Stroke.
   - 3.4 Unintended vascular occlusion.
   - 3.5 Retained catheter.
   - 3.6 Contrast media associated nephrotoxicity.
   - 3.7 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.
   - 3.8 Groin or retroperitoneal hematoma requiring transfusion or surgery.
   - 3.9 Arteriovenous fistula / pseudoaneurysm at puncture site.
   - 3.10 Breakage and knot forming of catheter or guidewire is very rare, this may require surgical removal.
4. Minor complications includes:
   - 4.1 Fever and localized pain.
   - 4.2 Puncture site complications such as groin hematoma, bruise and pain.
   - 4.3 Complications related to contrast medium injected – rash, urticaria
   - 4.4 Transient neurological deficit which is reversible within 24 hours (limb weakness, numbness).
   - 4.5 Transient visual loss.
   - 4.6 Arrthymia.

Disclaimer

This leaflet only provides general information pertaining to this operation / procedure. While common risks and complications are described, the list is not exhaustive, and the degree of risk could also vary between patients. Please contact your doctor for detailed information and specific enquiry.

Reference

Smart Patient Website by Hospital Authority: Embolization of Head, Neck and Brain Tumours (2010)