EMBOLOTHERAPY FOR ARTERIOVENOUS MALFORMATION

Information for patients

Introduction

- Arteriovenous malformations (AVM) are abnormal connections between arteries and veins that are congenital (present at birth). They do not have the normal intervening capillary bed that normally connect arteries and veins. They can occur in the brain, or in any organ in the body including head, limbs, trunk and internal organs.
- AVM in the peripheral parts of the body is often treated either by embolization or sclerotherapy. After these treatments, additional surgical reconstruction or resection may be considered on individual basis.
- Embolization is a procedure to treat this condition by occluding the abnormal communication between the branches of abnormal arteries and veins.
- This procedure is performed by a radiologist with special training in interventional radiology. It will be performed in the Department of Radiology under imaging guidance.

Procedure

- Before the procedure, blood tests, doppler ultrasound, computer tomography angiography (CTA), magnetic resonance imaging (MRI) may be performed to delineate the vascular structure and extent of involvement.
- The procedure may be performed under local or general anaesthesia, depending on the clinical conditions.
- The interventional radiologists may approach the AVM from the arteries, veins or puncture it directly. It is tailor-made for each case.
- Metal coils, intra-arterial alcohol, NBCA glue or other sclerosants will be deployed or injected at the AVM, and thus occluding the abnormal vascular communications.
- The procedure usually requires 3-4 hours or even longer, depending on the size and number of AVM.
- After the procedure, vital signs such as blood pressure, pulse rate, and oxygen saturation of blood will be closely monitored.
- Fluid and pain medicine will be given intravenously. A short course of steroid may be given. There may be blood in urine for several hours and adequate fluid intake is encouraged.
- There will be follow-up clinically, by Doppler ultrasound, CTA or MRI to assess the disease progress and the efficacy of treatment.
- More than one treatment session may be required if there are multiple supplying arteries to the AVM or there are multiple AVMs.

Potential Complications

- **Systemic complications**
  - Fever (common).
  - Bleeding, infection (occasional).
  - Embolization or flow of coils into systemic circulation: may cause occlusion of the major arteries to the brain, limbs and other organs, thus causing stroke, limb ischaemia or organ ischaemia which may then be life-threatening (uncommon).
  - Coil/sclerosant migration to other unrelated location (uncommon).
  - Acute pulmonary embolism due to sclerosant, causing shortness of breath or chest pain and may be life-threatening (rare).
  - Renal failure (uncommon).
  - Vascular and heart damage by catheters or guidewires (very rare).
  - Procedure related death is rare.
  - 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.
- **Local complications**
  - Overflow of sclerosant to more distal arteries: may cause digit ulcers or even tissue loss (uncommon).
  - Thrombosis / injury of access arteries and veins (occasional).
  - Local skin, muscle, nerve and soft tissue damage in sclerotherapy, which may lead to permanent functional loss like limping and cosmetic damage (uncommon).
- **Specific to sclerosants**
  - Alcohol.
  - Hemoglobinuria (hemoglobin passed in urine) & renal failure (after using alcohol).
  - Acute pulmonary hypertension (may occur if using alcohol) which may be life-threatening.
  - Glue.
  - Retention of guidewire and catheter due to obstruction by glue cast (rare), which may need surgery to remove it or may cause future vessel occlusion.

Disclaimer

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