Percutaneous Relief of Malignant Superior Vena Cava Obstruction

Information for patients

Introduction

- Superior vena cava (SVC) is a vein close to the heart. SVC Obstruction would cause difficulty in breathing, swelling in the face, chest and arms.
- Superior vena cava (SVC) obstruction is mostly caused by malignant tumour. Treatments include radiotherapy (irradiation treatment), chemotherapy (anticancer drugs) and steroid. Percutaneous transluminal angioplasty (PTA) and stenting is the treatment of choice for patients with SVC obstruction due to malignant disease and with symptoms unresponsive to radiation therapy and chemotherapy.
- The goals of the procedure are to re-expand the venous lumen and to maintain the patency of the vein. It could immediately alleviate the symptoms of venous congestion in over 90% of patients.
- The procedure is performed by radiologists with special training in interventional radiology.
- The procedure is performed in the Department of Radiology under imaging guidance.

Procedure

- It is performed under local anaesthesia using aseptic technique.
- Venous access into SVC could be either via the femoral vein (a vein under the groin), internal jugular vein (a vein in the neck) or a vein from the arm.
- A vascular sheath was first inserted in the vein; a catheter is then put close to the SVC.
- The site and extent of obstruction is delineated with X-ray and intravenous contrast.
- Intravenous heparin (anticoagulant) may be given to prevent blood clotting.
- A guidewire is inserted through the narrow lumen. A balloon catheter of appropriate size is introduced over the guidewire and the balloon is inflated to dilate the narrowed vein.
- A self-expanding metallic stent will be inserted across the narrowed vein if the balloon cannot adequately dilate the stricture. A bigger guiding catheter may be used for precise deployment of the metallic stent.
- In rare situation, dissolution of blood clot above the obstruction may be necessary. Thrombolytic agents (Drugs for dissolution of blood clot) will then be used. There are specific potential complications related to this.
- Venogram using X-ray and intravenous contrast would be performed to assess the result of the treatment. The vascular sheath would be removed immediately or one day later.

Potential Complications

Varies with different catheters, stents and the skin entry site, the known complications include:

- Infections.
- Thrombosis of the vein.
- Blockage of the stent.
- Migration of the stent: stent migration to the heart may cause irregular heart beat or major heart injury, surgical removal may then be necessary.
- Irregular heart beat.
- Pneumothorax, haemothorax or hydrothorax (air, blood or fluid accumulated in the space surrounding the lung).
- Venous injury or adjacent arterial injury.
- Puncture site haematoma.

Other rare complications include:

- Air embolism causing chest pain, shortness of breath or even death.
- Injury to brachial plexus (nerves in the neck or axilla).
- Accumulation of blood in space surrounding the heart, causing circulatory
- Impairment and possibility of death.
- Infection of endocardium (inner membrane of heart).
- Injury to thoracic duct (a major lymphatic drainage vessel).
- Pulmonary thromboembolism (blood clot flows to arteries in lungs causing obstruction. This can cause chest pain, shortness of breath or even death).
- Blood vessel erosion.
- Congestive heart failure due to rapid increase of venous return.
- 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 250000.

Disclaimer

Prepared in 2010 Version 2.0