

## Cerebral Digital Subtraction Angiography

### 腦數碼減影血管造影

**Side:** (please tick the appropriate)

Internal Carotid artery	-	<input type="checkbox"/>	Right	<input type="checkbox"/>	Left	<input type="checkbox"/>	Bilateral
Common Carotid artery	-	<input type="checkbox"/>	Right	<input type="checkbox"/>	Left	<input type="checkbox"/>	Bilateral
External Carotid artery	-	<input type="checkbox"/>	Right	<input type="checkbox"/>	Left	<input type="checkbox"/>	Bilateral
Vertebral Artery	-	<input type="checkbox"/>	Right	<input type="checkbox"/>	Left	<input type="checkbox"/>	Bilateral
Tranvenous Venogram	-	<input type="checkbox"/>	Right	<input type="checkbox"/>	Left	<input type="checkbox"/>	Bilateral

### **Introduction**

Cerebral Digital Subtraction Angiography (DSA) may be indicated:

1. To establish definitive diagnosis
2. To assess the vascular pathology of the head and neck region

Cerebral Digital Subtraction Angiography is a special X-ray examination of brain, head and neck blood vessels to diagnose underlying vessel problems. One of the most common reasons for angiogram is to look for underlying cause of brain haemorrhage related to cerebral aneurysm, cerebral vascular malformation or tumour rich in blood supply. It is sometimes used to define anatomy of blood vessels before surgery. This procedure will be performed by radiologist and or interventionist. The procedure will generally be performed under X-ray guidance.

### **The Procedure**

The procedure will be performed by local or general anesthesia under aseptic technique. The radiologist/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 The needle is then withdrawn, allowing a fine plastic tube (the catheter) to be placed over the guide wire into the blood vessel. The X-ray equipment will then be used to navigate the catheter into your neck region and special dye (contrast medium) will be injected through the catheter and X-rays taken.

During the procedure, you should not move your head or talk. As the special dye (contrast medium) passes around your head, you may get a warm feeling over your

head and facial region, which will soon pass off. The duration of the examination is different for every patient, it depends on the complexity of the condition.

At the end of the procedure, the catheter is removed and puncture site is compressed to stop bleeding.

Your vital signs (e.g. blood pressure, pulse) and neurological condition will be monitored during and after the procedure. Attention should be paid to the skin puncture site to make sure there is no bleeding from it. You should have bed rest for several hours and avoid vigorous movement to prevent bleeding over the puncture site.

### **Before the Procedure**

Inform the doctor if pregnant or breast-feeding. Also inform the doctor of any of the following conditions: asthma, diabetes, and allergies to iodine, shellfish, drugs, or latex.

Nasogastric tube and urinary catheter may be put in before the operation starts. In the procedure room, the patient is positioned on an x-ray table. A blood pressure cuff, heart monitor, and pulse oximeter are placed on the patient to monitor your vital signs. A sterile drape is placed over most of the patient's body. The patient's head is secured to the table with straps to keep it still.

### **Risk and Complication**

#### ***Potential complications***

- Overall death related to cerebral angiography is less than 0.1%.
- Overall incidence of major complications of cerebral angiography is less than 1%.

#### ***Major complications include:***

- Permanent neurological deficit (permanent limb weakness, numbness, visual loss).
- Groin or retroperitoneal hematoma requiring transfusion or surgery.
- Arterial occlusion requiring surgical thrombectomy, stenting or thrombolysis.
- Arteriovenous fistula / pseudoaneurysm at puncture site.
- Contrast medium 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.
- Breakage and knot forming of catheter or guidewire is very rare. This may require surgical removal.

***Minor complications include:***

- Groin bruise and pain.
- Complication related to contrast medium injected – rash, urticaria.
- Transient neurological deficit which is reversible within 24 hours (limb weakness, numbness).
- Transient visual loss.

**After the Procedure**

While the patient is in the observation area, nurses will check the vital signs, the puncture site, and attend to all of the patient's needs. It is necessary for the patient to lie still with his or her head flat for six to eight hours. Gradually the patient is allowed to get out of bed with assistance; light headedness and dizziness may occur if the patient gets out of bed too quickly.

When the patient is released home, he or she is advised to:

- Avoid heavy lifting, exercise, and driving for 48 hours.
- Avoid operating machinery for at least 24 hours. It is important not to stress the incision/puncture site.
- Drink plenty of fluids to flush the contrast dye from the kidneys for the next 24 hours.
- Avoid beverages that dehydrate the body, such as alcohol or coffee.
- Resume a regular diet.

**Follow up**

Appointment may be arranged for follow up in outpatient clinic and further treatment will be discussed if indicated.

**Return to hospital if:**

- There is bleeding, bruising, redness, warmth, or loss of feeling at the puncture site.
- Numbness, tingling or weakness occurs in the extremities (arms, legs) or face.

- Urination is difficult.
- A change or loss of vision occurs.
- Swallowing or talking is difficult.
- Mental confusion or comprehension difficulties occur.
- An allergic reaction develops, such as hives, itching, rapid heart beats, dizziness, chest pain, or shortness of breath.

### 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.