香港浸信會醫院
Hong Kong Baptist Hospital

Information on Embolization of Carotid Blowout

Introduction

1. Carotid blowout refers to rupture of the carotid artery and its branches. It is a life-threatening disease and tends to occur in patients with head-and-neck cancers and radiation-induced necrosis, recurrent tumors, or pharyngocutaneous fistulas.
2. Carotid blowout syndrome (CBS) can be classified into 3 types: threatened, impending, and acute. The reported neurologic morbidity and mortality rates associated with CBS are 40% and 60%, respectively.
3. Surgical management of carotid blowout is usually technically difficult because exploration and repair of the previously irradiated field are difficult. This approach is associated with an average neurologic morbidity rate of 60%.
4. Endovascular therapy with either permanent coils occlusion or stent deployment is reportedly a good alternative to surgery.
5. As many as 15%–20% of patients with CBS who are treated with permanent internal carotid artery occlusion have immediate or delayed cerebral ischemia. A balloon occlusion test may be performed before threatened CBS is treated definitively, but this test is usually not possible in acute cases. Additionally, test occlusion may not help identify the small group of patients in whom delayed hemodynamic ischemia develops after the internal carotid artery (ICA) is permanently occluded.
6. Reconstructive endovascular management of CBS seems reasonable to achieve hemostasis and to prevent neurologic morbidity. However, some reports of limited cases show unfavorable long-term outcomes after the deployment of foreign bodies into a field with ongoing contamination. Such studies suggest preserving flow in the artery adjacent to ongoing cancer and infection can leave the patient at a higher risk of delayed complications (e.g., subsequent bleeding or stent occlusion) than with carotid sacrifice.
7. Therefore, the endovascular treatment option (either permanent internal carotid artery occlusion or stent deployment) for each patient may be different and depends on various factors including patient's clinical condition, result of the balloon occlusion test if any, completeness of the circle of Willis, patency of contralateral carotid artery, etc.

The 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 internal carotid artery for either stent deployment or coils occlusion.
5. In case of stent deployment; a micro-guidewire will be advanced to the internal carotid artery. Stent of appropriate size will be placed within the internal carotid artery to cover the site of carotid blowout.
6. In case of permanent internal carotid artery occlusion; embolic materials (usually coils) will be deployed into the internal carotid artery in order to block it completely.
7. At the end of the procedure, the catheter may be removed or left in your groin region for later removal in the ward.
8. The duration of this procedure is different for every patient, it depends on the complexity of the condition. Usually the procedure last for one to two hours.
9. 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 Procedure

10. A written consent is required. Inform doctor on history of allergy to drugs, and allergy to contrast medium.
11. Check any bleeding tendency and correct if possible.
12. Fast for 6 hours before the examination.
13. Empty the bladder before the procedure, skin preparation of the puncture site.
14. For diabetic patient on drug - consult clinician concerned for the adjustment of insulin dosage if necessary.
15. During the examination, patient is advised to listen carefully to the instructions given by our staff.

Patient's Label
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After the 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 of endovascular treatment for carotid blowout ranging from 15% to 60%.
2. The combined rate of death and any permanent disabling neurological deficit is 60%.
3. Major complications includes:
   - Permanent neurological deficit (permanent limb weakness, numbness, visual loss).
   - Acute pseudoaneurysm rupture during the procedure.
   - Acute thromboembolism.
   - Rebleeding.
   - Carotid / stent thrombosis, stent-graft infection, brain abscess in patient treated with stent deployment.
   - Groin or retroperitoneal hematoma requiring transfusion or surgery.
   - Arteriovenous fistula or pseudoaneurysm at the puncture site.
   - 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 rare.
   - Breakage and knot forming of catheter or guidewire is very rare, this may require surgical removal.
4. Minor complications includes:Groin 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.
5. Allergic reaction to intravenous contrast medium.
   - **Mild reactions**: For example, itching, mild skin rash, nausea, vomiting, feeling of warmth, arm pain, sneezing, coughing, and chest tightness. A few patients may experience delayed reactions usually within 24 hours, which include pain at injection site, itching, rash, painful or swollen salivary glands. The symptoms are usually transient, requiring minimal or no treatment.
   - **Moderate reactions**: These symptoms are more severe and last for longer duration. Patient may also experience rash or urticaria, fever and chills, an increase or decrease in blood pressure and palpitation. Specific treatment and close monitoring are required.
   - **Severe reactions**: The symptoms include shortness of breath, irregular heartbeat, chest pain, severe kidney failure, convulsion, and unconsciousness. If these symptoms occur, the patient will require urgent medical treatment.
   - **Death**: Contrast medium may cause severe allergic reaction and leading to death but it is extremely rare

Disclaimer

This leaflet only provides general information pertaining to this 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 Carotid Blowout (2022)

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Signature of Patient:_____ Date: _____