
Massive Hemoptysis during Catheterization of the Internal Jugular Vein

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Percutaneous cannulation of the internal jugular vein is commonly performed to obtain central venous access. We report the first case of massive hemoptysis occurring during cannulation of the internal jugular vein.

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Cannulation of the internal jugular vein (IJV) is currently accepted as a relatively safe method of obtaining central venous access.1 The most common complication is carotid artery puncture, which is usually benign.2 We report a case of massive hemoptysis, cervical hematoma and airway obstruction occurring during IJV catheterization.

CASE REPORT

A 51-year-old woman with a history of intravenous drug abuse was being treated for osteomyelitis with a six-week course of piperacillin, oxacillin, and gentamicin. Due to the need for prolonged antibiotic administration, catheterization of the right IJV for venous access was performed.

An 18-gauge needle was inserted via the anterior approach with immediate return of venous blood. A .035 mm guidewire was threaded, the vessel dilated with a 7 French dilator, and a 7 French triple lumen catheter was inserted without difficulty. Suddenly, the patient complained of severe chest pain and turned her neck dislodging the catheter. She bled vigorously from the puncture site and developed a large cervical hematoma despite the application of pressure. She rapidly became hypotensive and diaphoretic, and was treated with fluids and infusion of intravenous norepinephrine to maintain blood pressure. She complained of shortness of breath, developed stridor, and had 300 to 400 ml of bright-red hemoptysis. The patient was intubated with some difficulty because of the amount of hemoptysis and transferred to the intensive care unit.

The norepinephrine infusion was rapidly tapered and discontinued. There was continued mild bleeding through the endotracheal tube which resolved over two hours. The patient’s hematocrit value initially decreased from 40 to 30 percent, then stabilized at 32 percent after transfusion of three units of packed red blood cells. The patient’s PT, PTT, and platelet count were within normal limits.

The patient was never noted to have a carotid bruit or thrill. Angiography of the cervical and thoracic vessels done two days later was normal and did not demonstrate an arteriovenous fistula. The chest roentgenogram revealed bilateral alveolar infiltrates consistent with blood aspiration, which cleared over eight days. There was no evidence of air in the soft tissues of neck, pneumothorax, or pneumomediastinum at any one time. The cervical hematoma resolved slowly, allowing the patient to be extubated after seven days, and resolving completely in three weeks.

REFERENCES

1 English ICW, Frew RM, Pigot JF, Zaki M. Percutaneous catheterization of the internal jugular vein. Anaesthesia 1969; 24:521-31
4 Wiseheart JD, Hasson MA, Jackson JW. A complication of internal jugular cannulation. Anaesthesia 1979; 34:1035-37
6 Knoblanche GE. Respiratory obstruction due to hematoma following internal jugular vein cannulation. Anaesth Inten Care 1979; 7:286

DISCUSSION

Central venous catheterization of the IJV has a low complication rate.1 The most common complication is carotid artery puncture, occurring in 4.2 percent of cases, usually without significant consequences.2 Other complications include pneumothorax, thrombosis of the IJV, air embolus, and cerebrovascular accidents.

There have been reports of less frequent, but more serious, complications, such as massive hemorrhage from carotid arteriotomy after attempted IJV cannulation in patients on cardiopulmonary bypass.3 Wiseheart et al reported a death from massive hemorrhage after IJV cannulation secondary to puncture of the ascending cervical artery with tears in the mediastinal and apical pleura and resultant hematoma. Hansbrough et al proposed two cases of presumed IJV-carotid artery fistulae manifested by cervical bruits. Cervical hematoma that caused airway obstruction requiring intubation was reported by Knoblanche.4 Two cases of tracheal puncture during IJV cannulation diagnosed by sudden leak in the endotracheal tube cuff have been reported.5

Our patient is the first described to have massive hemoptysis associated with a cervical hematoma and airway obstruction following IJV cannulation. Although the actual mechanism of hemoptysis cannot be established, it is possible that the needle created a fistulous tract between the IJV, carotid artery, and trachea. This laceration could have provided a route for the development of hemoptysis and a cervical hematoma leading to acute airway obstruction. Alternatively, hemoptysis may have been caused by lung puncture, as reported during transthoracic needle biopsy. However, this is unlikely as the patient did not develop a pneumothorax, and hemoptysis in needle biopsy is usually insignificant.6

The dramatic, sudden occurrence of a cervical hematoma, airway obstruction, and massive hemoptysis during insertion of an IJV catheter emphasizes the potential for life-threatening complications during IJV cannulation.

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