Horner’s Syndrome Following Central Venous Catheterisation

Bhavna Sriramka, Narayan Prasad Sahoo

ABSTRACT
Central venous catheters (CVC) are often inserted in critically ill patients. Complications associated with this procedure are more often than reported in literature. Use of ultrasound improves the likelihood of success of CVC, thus decreasing the adverse events. We report a case in which inadvertent injury to the sympathetic fibres occurred during insertion of CVC which led to Horner’s syndrome.

Keywords: Central venous catheter, Complication, Horner’s syndrome.

INTRODUCTION
Central venous catheterisation is a now routine procedure in critically ill patients. Complications associated with central venous catheter (CVC) range between 5 and 19%.1 This demands effective steps to minimise and prevent them. Operator inexperience is one of the many factors that influences the occurrence of complications associated with central venous catheterisations. With practice the learning curve improves and rate of complications decrease. Ultrasound guided central venous catheterisation reduces the gap between the experienced and the in-experienced and provides better correlation with the anatomical landmarks.2 Here we report a rare complication of Horner’s syndrome that occurred in our routine practice of CVC insertion.

CASE REPORT
A 13-year-old female presented for an emergency appendicectomy operation to our hospital. Due to difficult peripheral access, a central line insertion (internal jugular catheterisation) on right side was undertaken. The procedure was uneventful and surgery proceeded under spinal anaesthesia. Post-operatively in the recovery room, we noted that she had developed ptosis, miosis and anisocoria (Horner’s syndrome) of the right eye without any visual disturbances. Bedside ultrasonography did not reveal any haematoma in the carotid sheath (Figs 1A and B). Ophthalmological consultation suggested a conservative management. The catheter was removed on day 2 (Fig. 2) and patient was subsequently discharged. After 7 days following the surgery, the patient arrived at the follow-up clinic for removal of sutures with complete recovery from her symptoms.

DISCUSSION
Horner’s syndrome occurs due to an oculosympathetic lesion blocking nerve fibres at the central or peripheral levels. It is one of the recognised complication of internal jugular venous catheterisation.3 However, the incidence is variable since it often goes unnoticed due to minimal symptomatology and spontaneous recovery.4 Risk factors for development of the syndrome include the following: Insertion of large bore catheters,5 difficult catheterisation

Fig. 1A: Plain ultrasonography of the carotid sheath which does not show haematoma

Fig. 1B: Colour Doppler of the carotid sheath clearly showing the vessels
with repeated needling attempts, large needle-skin angle during insertion\textsuperscript{4,6} excess rotation of head and neck\textsuperscript{7} and accidental carotid artery puncture.\textsuperscript{8} Most of these cause carotid sheath haematoma with neuropaexia of the second-order sympathetic fibres in and around the cervical ganglia presenting with acute Horner’s syndrome. In the present case, ultrasound ruled out the presence of haematoma indicating that the needle may have directly damaged the sympathetic trunk. Links et al have also described central vein thrombosis (well-recognised complication of central venous access), leading to temporary injury to the sympathetic tract in the neck.\textsuperscript{9} However, the presentation of Horner’s syndrome in such cases is delayed.

Although the natural course of Horner’s syndrome is not predictable, there is some evidence that the time length following injury or pressure applied on the second-order neuron might be related to outcome. Kaya et al found that in adults with Horner’s syndrome secondary to chest tube malposition, early removal of the apical chest tube resulted in early recovery.\textsuperscript{10} Spontaneous recovery occurs in most, but occasionally it can be permanent.\textsuperscript{11} The use of ultrasound guidance for central venous catheterisation improves the success rate and reduces the incidence of complications as well as time spent while doing the procedure.\textsuperscript{2,12} Not only does the use of ultrasound provide a better correlation with the anatomical landmark to inexperienced operators, it is a important tool for the experienced operator for difficult cannulations.\textsuperscript{13}

**CONCLUSION**

Horner’s syndrome is a relatively rare complication of central line catheterisation. Though carotid sheath haematoma is the most likely cause, direct injury to the sympathetic chain as in our case may cause the lesion where recovery is spontaneous. The purpose of this article is to emphasise the use of ultrasound during central venous cannulations.

**REFERENCES**


**ABOUT THE AUTHORS**

**Bhavna Sriramka** (Corresponding Author)
Senior Resident, Department of Anaesthesia and Critical Care, Pt. Jawaharlal Nehru Memorial Medical College Raipur, Chhattisgarh-492001, India, Phone: +91-96928-24741 e-mail: bhavna.sriramka@gmail.com

**Narayan Prasad Sahoo**
Senior Consultant and Head, Department of Anaesthesia and Critical Care, Ispat General Hospital, Rourkela, Odisha, India