

A CASCADE OF UNICUSPID VALVES IN THE INTERNAL JUGULAR VEIN

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ABSTRACT

We are reporting here a unique cascade-like arrangement of single cusps in the right internal jugular vein observed in a formalin-fixed embalmed cadaver of a 65 year old male which has not been observed and described in the literature. The anomaly may be of interest not only to the morphologist but also to the clinical practitioner working on the internal jugular veins.

KEY WORDS: Internal jugular vein (Non-MeSH), Heart Valves (MeSH), Unicuspid (Non-MeSH), Anomaly (Non-MeSH), Cannulation (Non-MeSH).

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INTRODUCTION

Catheterization of the internal jugular vein (IJV) is a common and everyday clinical procedure for hemodynamic monitoring, parenteral nutrition, administration of fluids or medication and hemodialysis.^{1,2} Presence of valves in the IJV is known since long time. In fact William Harvey's drawings and descriptions in 1629 have clearly depicted these valves and several studies pertaining to these valves have been carried out ever since.^{3,4} In these reports unilateral and bilateral existence of unicuspid, bicuspid and tricuspid valves have been described with varying incidences.^{5,6}

Presence and competence of IJV valves is important in maintaining the intracranial pressure during coughing, chest compression and positive pressure ventilation.^{7,8} During the course of our regular dissection sessions with students we came across a cascade of unicuspid valves in the internal jugular vein which has not been reported so far in the literature and may be of value not only to the teachers and students of anatomy but

also to the clinicians working in this area.

CASE REPORT

Observations were recorded on a formalin-fixed embalmed cadaver of a male aged 65 years at the Department of Human Anatomy, Faculty of Medicine, Umm al Qura University, Makkah during the course of a regular dissection session with the students of medicine.

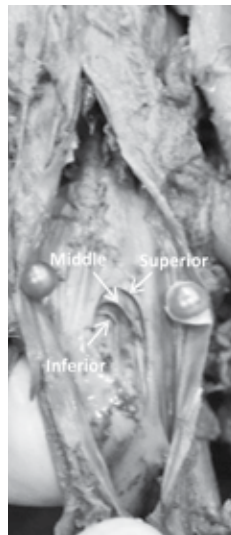


Figure 1: Showing the cascade of cusps in the right internal jugular vein.

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A cascade of three unicuspid valves was observed in the right internal jugular vein (Figure 1). The location (lower limit of the cascade) was 21 mm from the subclavian-jugular bifurcation of the vessel. The position was posteromedial at 2 o'clock. The three cusps were of varying sizes, the largest being superior and the smallest being inferior. Measurements were taken using sliding vernier calipers (Mitutoyo, Japan) to the nearest millimeter. Vertical measurements (maximum depth) of the cusps were: superior, 9.6 mm, middle 7.8 mm and inferior 3.2 mm. The transverse measurements (maximum widths) of the cusps were: superior, 10.7 mm, middle 10.2 mm and inferior 4.1 mm.

On the left side of the cadaver a normal looking bicuspid valve of the internal jugular vein was observed located inferior to the clavicle and at 18.4 mm from the subclavian-jugular bifurcation. The cusps were antero-medial and postero-lateral in position and their width was 22.3 mm and 23.1 mm respectively.

DISCUSSION

Drainage of blood from the brain normally takes the route either by the vertebral or the internal jugular veins and depends upon the posture and respiration. Competent internal jugular venous valves provide an important mechanism to stop retrograde flow of blood in conditions of raised pressure such as during cardiopulmonary resuscitation. Anatomy of these valves and their variations are germane not only to the anatomist for academic purpose but also to the clinicians working on the IJVs such as for

cannulation and catheterization.

Valves have been observed bilaterally and unilaterally in most IJVs and in most people in the distal part of the veins. These valves are mostly bicuspid, some are tricuspid and least common are the unicuspid.⁹ We are reporting here a unique cascade-like arrangement of three single cusps in the right internal jugular vein which has not been observed and reported in the literature.

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CONFLICT OF INTEREST

Authors declared no conflict of interest

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