The Naming of Jugular Venous Valves

To the Editor:

In Dr Charles F. Babbs’s recent review article, he states in the Methods section that “Niemann’s valves between the chest and jugular veins at the level of the thoracic inlet are actual but little-known anatomic structures that function to block headward transmission of large positive pressure pulses in the chest during cough and also during CPR.”

The jugular venous valves have been known for centuries. Harvey was among the first to describe them, but they were probably known for at least 100 years before his publication. Anatomists had been burnt at the stake on the Continent for questioning the Roman Catholic Church’s dogma on nature. Anatomists had been burnt at the stake on the Continent for questioning the Roman Catholic Church’s dogma on nature.

Bamberger’s name (Osler’s teacher in Vienna) is attached to the subclavian valves, was well known in the 19th century, and was perhaps reasonable of me to refer to them as “little-known anatomic structures.” My own knowledge of this subject stems from Niemann et al’s slightly earlier publications in 1981 and my own studies, published in 1980, that suggest mechanisms for preferential brachiocephalic blood flow during CPR.

In their studies of cineangiography during CPR, Niemann et al noted that “Retrograde flow into the extra-thoracic brachiocephalic veins was abruptly halted by closure of venous valves as compression continued.” Figure 5 of this article displays an angiographic snapshot of the venous valves in action. A year or so earlier, Bill Voorhees, Tack Tacker, and I (Figure 2 in Reference 3) demonstrated a jugular venous valve mechanism by continuous-pressure recording during catheter pullback during CPR. This research demonstrated that the action of jugular venous valves protects the capillary beds of the head and brain from the high venous pressure pulses caused by chest compression. As a result, we concluded, as did Niemann et al, that mean cerebral perfusion pressure tends to be greater than mean coronary perfusion pressure during CPR.

In memory of my stimulating discussions with Jim Niemann in the late 1970s and early 1980s about the importance of jugular venous valves, I tend to refer to these valves as Niemann’s valves. Perhaps in the future I should refer to them as Voorhees-Niemann-Fisher valves or, possibly, as Harvey’s valves for short. Three cheers for all the CPR researchers of the 1980s. We did a lot of good work back then, some of which may finally be coming to fruition in the form of interposed abdominal compression and phased thoracic abdominal compression-decompression (Lifestick) CPR.

Jeffrey Fisher, MD
Clinical Associate Professor of Medicine
New York Presbyterian Hospital
Weill Medical College of Cornell University
311 East 72nd Street
New York, NY 10021

Response

I know how painful it is to have one’s work ignored, and I appreciate learning of Dr Fisher’s fine studies on the function and clinical significance of jugular venous valves, which frankly were unknown to me. The title of Dr Fisher’s own article “The Rediscovery of Intrathoracic Venous Valves,” suggests that it was perhaps reasonable of me to refer to them as “little-known anatomic structures.” My own knowledge of this subject stems from Niemann et al’s slightly earlier publications in 1981 and my own studies, published in 1980, that suggest mechanisms for preferential brachiocephalic blood flow during CPR.

In their studies of cineangiography during CPR, Niemann et al noted that “Retrograde flow into the extra-thoracic brachiocephalic veins was abruptly halted by closure of venous valves as compression continued.” Figure 5 of this article displays an angiographic snapshot of the venous valves in action. A year or so earlier, Bill Voorhees, Tack Tacker, and I (Figure 2 in Reference 3) demonstrated a jugular venous valve mechanism by continuous-pressure recording during catheter pullback during CPR. This research demonstrated that the action of jugular venous valves protects the capillary beds of the head and brain from the high venous pressure pulses caused by chest compression. As a result, we concluded, as did Niemann et al, that mean cerebral perfusion pressure tends to be greater than mean coronary perfusion pressure during CPR.

In memory of my stimulating discussions with Jim Niemann in the late 1970s and early 1980s about the importance of jugular venous valves, I tend to refer to these valves as Niemann’s valves. Perhaps in the future I should refer to them as Voorhees-Niemann-Fisher valves or, possibly, as Harvey’s valves for short. Three cheers for all the CPR researchers of the 1980s. We did a lot of good work back then, some of which may finally be coming to fruition in the form of interposed abdominal compression and phased thoracic abdominal compression-decompression (Lifestick) CPR.

Charles F. Babbs, MD, PhD
Associate Research Scholar
Department of Basic Medical Sciences
Purdue University
West Lafayette IN 47907-1246
babbs@vet.purdue.edu


The Naming of Jugular Venous Valves
Jeffrey Fisher

Circulation. 2000;102:e181
doi: 10.1161/01.CIR.102.24.e181

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/102/24/e181

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published
in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/