

## Letters

### COMMENT & RESPONSE

**In Reply** I appreciate the kind words and insightful observations of Breakey in response to “The David Sign”<sup>1</sup> concerning Michelangelo’s sculpture, *Brutus* (circa 1542). As Breakey describes, this bust does reveal jugular venous distention (JVD) and is likely based on the sculpture *Caracalla* (circa 212 CE) of the Roman emperor of the same name. This deserves further discussion.

Indeed, JVD has been present in statues that predate Michelangelo’s *David* (1504). In my article,<sup>1</sup> I mentioned the presence of JVD in the sculpture *Laocoön and His Sons*, where Laocoön is fighting for his life. This marble sculpture (possibly a copy of an earlier lost bronze work) was created in the Hellenistic period (323 BCE to 31 CE), probably between 42 and 20 BCE (and only rediscovered in 1506). There are other earlier statues from the Hellenistic period that also demonstrate JVD. The bronze *Terme Ruler*, from the third to first century BCE, clearly has JVD. The question I keep wondering is what these artists were trying to portray by emphasizing normal, intermittent JVD. JVD itself wasn’t recognized to represent disease until 1728.<sup>2</sup> As a cardiologist in the 21st century, I see the David sign as a recognition of normal, intermittent JVD in excited individuals who are breathing against a partial or completely closed glottis (Valsalva maneuver), such as with grunting respiration, forceful speaking, or heavy labor. As a medical educator, using the methods of visual thinking and the limited understanding of the circulatory system in the past, I see different messages that appear to have evolved over time.

Before William Harvey, MD, the venous system was felt to be a system supplying nutrition to the body from the liver.<sup>3</sup> To my knowledge, the earliest depiction of JVD in Hellenistic statues appears to demonstrate vitality. The *Terme Ruler* is not excited or in battle. He appears vital, standing with an arm holding on to and balancing himself on his

spear. The later *Laocoön* is clearly in battle for his life, and his JVD emphasizes his exertion. As noted previously, both the *David* and *Moses* are thought to be in a state of excitement before exertion.<sup>1</sup>

But what about the presence of JVD in *Brutus*? While he is fashioned after the Roman sculpture *Caracalla*, and thus his JVD might represent vitality, according to Wallace,<sup>4</sup> he is different. Wallace describes *Brutus* with “powerful, frowning countenance and the directed gaze...enhanced by the rippling eyebrows...and firmly pressed lips...enhanced by roughened surfaces...a man of principles and action.”<sup>4</sup> Thus, *Brutus*’ JVD is certainly consistent with Michelangelo’s theme of using JVD to represent excitement before action.

Again, we are in awe of the skill of these artists. They give us not only a deeper understanding of their subjects but also a desire to learn more, and they accomplish this with subtle clues in their artwork.

Daniel M. Gelfman, MD

**Author Affiliation:** Division of Clinical Affairs, Marian University College of Osteopathic Medicine, Indianapolis, Indiana.

**Corresponding Author:** Daniel M. Gelfman, MD, Division of Clinical Affairs, Marian University College of Osteopathic Medicine, 3200 Cold Spring Rd, Indianapolis, IN 46222 (dgelfman@marian.edu).

**Published Online:** August 5, 2020. doi:10.1001/jamacardio.2020.2876

**Conflict of Interest Disclosures:** None reported.

1. Gelfman DM. The David sign. *JAMA Cardiol*. 2020;5(2):124-125. doi:10.1001/jamacardio.2019.4874

2. Fye WB. Giovanni Maria Lancisi, 1654-1720. *Clin Cardiol*. 1990;13(9):670-671. doi:10.1002/clc.4960130917

3. Aird WC. Discovery of the cardiovascular system: from Galen to William Harvey. *J Thromb Haemost*. 2011;9(suppl 1):118-129. doi:10.1111/j.1538-7836.2011.04312.x

4. Wallace WE. *Michelangelo: The Complete Sculpture, Painting, Architecture*. Universe Publishing; 2009:124. doi:10.1017/CBO9780511998270