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Reasons Elevated B-Type Natriuretic Peptide Levels Are Associated With Adverse Outcome in Patients Undergoing Cardiac Surgery

To the Editor:

We read with interest the recent article by Nozohoor et al[1] who studied a total of 407 consecutive patients undergoing cardiac surgery and found that elevated B-type natriuretic peptide (BNP) levels were associated with adverse postoperative outcome (prolonged ventilation and inotropic support) and were predictive of impaired late survival. However, they did not point out why elevated BNP was associated with adverse outcome in patients undergoing cardiac surgery.

BNP levels are affected mainly by two factors. First, BNP is synthesized and secreted from cardiomyocytes in response to atrial or ventricular wall stretch.[2] The main entities that elevate ventricular or atrial wall stretch after cardiac surgery are acute heart failure (HF) and atrial fibrillation (AF). BNP levels are markers of increased ventricular strain, typically from pressure or volume overload, which identify patients at risk of left ventricular impairment and increased mortality after cardiac surgery.[3,4] In addition, BNP levels rise in the setting of AF, including isolated AF.[5] Thus, high BNP levels can predict the risk of HF or AF. Second, both BNP and N-terminal pro-BNP levels increase with age,[6,7] and there is a reduction in the natriuretic peptide clearance with aging.[8] These three factors (ie, aging, HF, and AF) that elevate BNP levels are associated with adverse outcome in patients undergoing cardiac surgery; thus, they are an indicator of poor myocardial recovery or impaired late survival.

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Noncardiac Surgery in the Prone Position in Patients With Ventricular Assist Devices

To the Editor:

After a literature review and PubMed search using the key words "prone," "ventricular assist device," "noncardiac surgery," and "position," we report the first case of surgery in the prone position in a patient with a ventricular assist device (VAD). A 72-year-old woman with a previously implanted Heartmate II (Thoratec Corporation, Pleasanton, CA) Left Ventricular Assist Device presented to the authors' institution with an expanding right frontoparietal hematoma and left-sided hemiplegia. As such, the patient proceeded to the operating room for a right parietal craniotomy for decompression of an intracerebral hematoma.

Although experiences in surgery, neurosurgery, and anesthetic considerations for noncardiac surgery in VAD patients previously have been published, no authors specifically addressed the prone position despite the fact that it decreases both the cardiac index and venous return.[1-4] Of note, "the anesthesiologist must consider the effect that surgical positioning will have on venous return, because adequate circulating blood volume is an important factor in maintaining device output."[3] Furthermore, the Heartmate II Left Ventricular Assist System operating manual specifically states that "the patient should not sleep on his or her stomach."[5]