Letter to the Editor

Severe epistaxis during adult extracorporeal membrane oxygenation: not your average nosebleed

Michael Mazzeffi[1], Jesse Kiefer[1], Zachary Kon[2], Jeffrey Wolf[3]

[1]Department of Anesthesiology, [2]Cardiothoracic Surgery, [3]Otorhinolaryngology-Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD 21201, USA

Correspondence to: Michael Mazzeffi, MD, MPH. Assistant Professor, Department of Anesthesiology, University of Maryland School of Medicine, 22 South Greene Street S11C00 Baltimore, MD 21201, USA. Email: mmazzeffi@anes.umm.edu.

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We recently read the review article by Makdisi and Wang on extracorporeal membrane oxygenation (ECMO) (1). Although ECMO can be life-saving, approximately one third of patients experience bleeding complications (2,3). It has been our observation that some patients experience severe epistaxis, but this problem is not well described in the literature and was not mentioned in the review. We retrospectively reviewed all ECMO patients at our center over a three and a half year period to better define the epidemiology, risk factors, management, and sequela of this problem. The Institutional Review Board approved our review.

A total of 132 patients had ECMO during the 3 and a half-year period. 64 of these patients had veno-venous (VV) ECMO and 54 patients had veno-arterial (VA) ECMO. An additional 14 patients had sequential ECMO (transitioning mostly from VA to VV). Patients required ECMO for a median of 7 days. Severe epistaxis was defined as bleeding that required a surgical intervention or prolonged packing (>48 h). Patients were anti-coagulated with heparin and anticoagulation goals were an activated clotting time (ACT) of 140-160 s or activated partial thromboplastin time (aPTT) of 45-55 s for VV ECMO and an ACT of 180-200 s or aPTT of 60-80 s for VA ECMO.

Severe epistaxis occurred in 7 patients (5.3%). Two of these patients were on VV ECMO and five were on VA ECMO at the time of their bleed. Two patients had spontaneous bleeding and all others bled after feeding tube placement. The majority of patients (5 of 7) were thrombocytopenic with a platelet count of less than 100,000/μL at the time of their bleed. Hypofibrinogenemia was uncommon as 5 of 6 patients had a fibrinogen level greater than 200 mg/dL at the time of their bleed.

Patients were managed with surgical packing using polyvinyl alcohol absorbent sponges and in some cases temporary hemostatic gauze (oxidized cellulose polymer). Packing was for a median of 6 days (minimum =3 days and maximum =14 days). One patient required silver nitrate cautery and purse string suturing of a bleeding site. That patient was noted to have a prominent Kesselbach plexus on nasal examination. Another patient required electro-cautery of a small bleeding site on the anterior nasal septum. Heparin was temporarily held for 3 h in one patient with severe bleeding. Five of seven patients received antibiotic prophylaxis with ampicillin and sulbactam and no patient in the cohort developed sepsis.

The etiology of bleeding during ECMO is multifactorial, but is in part due to qualitative platelet dysfunction, destruction of large von Willebrand multimers, and systemic anticoagulation (4,5). ECMO patients might also be prone to epistaxis from venous congestion related to cannulation of the superior vena cava with large cannulas. Most bleeding was related to instrumentation of the nose, but spontaneous bleeding also occurred. Nasal packing was an effective therapy in all patients although prolonged duration of packing was sometimes necessary. No patient experienced complications related to prolonged nasal packing and cessation of anticoagulation was rarely necessary to achieve hemostasis.

Our data are limited by their retrospective nature, but suggest that severe epistaxis is not uncommon during ECMO and can be managed with temporary packing while

continuing systemic anticoagulation.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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