



Procedural Sedation/ Anesthesia Protocol Among Acute Ischemic Stroke Patients Undergoing Endovascular Revascularization Procedures: The Nursing Perspective on What Is Being Practiced Nationwide

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ABSTRACT: Background: The updated American Heart Association/American Stroke Association guidelines favor conscious sedation over general anesthesia but allow that choice of anesthesia modality during endovascular therapy for acute ischemic stroke (AIS) to be based on a specific clinical scenario taking patient risk factors into consideration. Little evidence is available on who is most suited to provide anesthesia management to AIS patients undergoing these emergent endovascular interventions. Given the limited data on sedation management and the nursing role during endovascular revascularization therapy, a nationwide survey was conducted. The purpose of this study was to gather data on current practice about anesthesia/sedation management and nursing involvement during endovascular revascularization procedures among AIS patients.

Methods: A survey was presented in English and electronically distributed to all current and past Association for Radiologic and Imaging Nursing (ARIN) members via the ARIN List Serve with a 1-month timeline to respond to the survey questions. The survey consisted of 17 multiple-choice questions with free-text response available when applicable. Some of the multiple-choice questions allowed choice of all applicable answers. Members were asked to participate if they worked in the interventional radiology/interventional neuroradiology department and were currently involved in the management of AIS patients during endovascular revascularization therapy. Recipients had the option of whether to complete the survey or to skip any question in the survey. To maintain confidentiality, response via SurveyMonkey was considered consent.

Results: A total of 109 nurses responded to the survey questions. In most cases, the certified registered nurse anesthetist or the anesthesiologist was responsible for the anesthesia management of AIS patients undergoing endovascular revascularization procedures regardless of the anesthesia modality chosen (36.19%). If a registered nurse (RN) was responsible for sedation management, most of the time (33.33%) she or he felt comfortable in this role. Approximately 20% of responding RNs preferred to have the anesthesia team member in this role, 8.57% were somewhat uncomfortable in this role, and 1.90% reported being uncomfortable. Approximately 47.66% of the survey respondents confirmed that the RN providing procedural sedation was qualified to administer vasoactive drips, whereas 8.41% disagreed.

Conclusions: Randomized clinical trials are necessary to establish if there is truly a difference in clinical outcomes among AIS patients who are managed with general anesthesia versus conscious sedation during endovascular revascularization interventions, as well as comparing clinical outcomes of AIS patients from stroke centers where anesthesia is always provided by the anesthesia team versus stroke centers using a variety of providers. Large longitudinal studies are necessary as most facilities perform less than six procedures per month, and data will need to be correlated with National Institute of Health Stroke Scale scores and imaging findings. (J Radiol Nurs 2016;35:12-18.)

KEYWORDS: Acute ischemic stroke; Anesthesia; Sedation; Interventional radiology; Endovascular treatment; Endovascular revascularization; Mechanical thrombectomy; Nursing role.

INTRODUCTION

In spite of medical advances, stroke remains a leading cause of death and disability worldwide with the highest incidence of stroke being reported in low-income and middle-income countries (Truelsen et al., 2015). However, in 2008, stroke incidence dropped from the third to the fourth leading cause of mortality in the United States (Jauch et al., 2013). Currently available management options for acute ischemic stroke (AIS) include prevention and secondary risk management via blood pressure (BP) control, lipid management, antiplatelet/anticoagulation therapies, and smoking cessation; tertiary disease management via intravenous (IV) administration of recombinant tissue-type plasminogen activator (r-tPA); and endovascular revascularization options (intra-arterial r-tPA administration and mechanical thrombectomy). IV tPA treatment within 3 hr of AIS symptoms onset was approved by the Food and Drug Administration (FDA) in 1996 and remains the only FDA-approved treatment option for AIS patients. Its administration improves functional outcomes at 3 to 6 months, if delivered within 3 hr of AIS symptoms onset, and recently has been extended up to 4.5 hr (off-label use) in selected groups of AIS patients (Powers et al., 2015). Intra-arterial fibrinolysis with r-tPA delivered within 6 hr of stroke onset is an off-label use and can be considered in carefully chosen

patients, who are beyond the 3- to 4.5-hr time window, and/or have contraindications to IV tPA (Powers et al., 2015).

Recent randomized clinical trials have demonstrated the benefit of endovascular revascularization therapy with mechanical thrombectomy devices with retrievable stents as the most promising endovascular intervention for AIS, if performed within the first 6 hr from symptoms onset (Fargen et al., 2015). Moreover, the findings of these studies led to an update of the 2013 American Heart Association/American Stroke Association (AHA/ASA) Guidelines for the Early Management of Patients with Acute Ischemic Stroke (Powers et al., 2015). Available evidence favors conscious sedation over general anesthesia during endovascular revascularization for AIS; however, the evidence is weak owing to limited randomized clinical trials supporting this practice (Brinjikji et al., 2015). The updated AHA/ASA guidelines (Powers et al., 2015) incorporate the available evidence and favor conscious sedation over general anesthesia but allow the choice of anesthesia modality during endovascular therapy for AIS. This choice should be based on the specific clinical scenario taking patient risk factors into consideration (class IIB; level of evidence: C). Little evidence is available on who is most suited to provide anesthesia management to AIS patients undergoing these emergent endovascular interventions.

Recently published recommendations by the Society for Neuroscience in Anesthesiology and Critical Care (SNACC) on anesthetic management of AIS patients undergoing these procedures are mostly based on expert opinion (Talke et al., 2014). SNACC recommends that the anesthesiologist/anesthesia team be present to provide sedation and strict hemodynamic monitoring of these patients given the emergent nature and complexity of patients with AIS, as well as the intricacy of the procedure. At the same time, these recommendations also state that other qualified nonanesthesia personnel, including registered nurses (RNs), may provide sedation under direct supervision of the responsible physician. SNACC recommendations do not specify the training, skill set,

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