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Efficacy and safety of intravenous midazolam/fentanyl for pain relief during vascular access intervention

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Objectives:
Vascular access dysfunction lowered the survival rate and vascular survival rate in hemodialysis patients. When vascular access dysfunction occurs, the treatment of choice is endovascular intervention, the most worrying part is pain. Intravenous administration of Midazolam/fentanyl is known as a standard treatment for pain relief. In this study, we observed the findings of pain reduction and complications that occur during endovascular intervention to treat dysfunction of vascular access using two drugs.

Methods: This study was conducted as a single, observational study. The study was conducted from March 1, 2020 to December 15, 2020, and was conducted after informed consent. Numeric Rating Scale (NRS) and Visual Analog Scale (VAS) were used as pain assessment scales, and scores were checked by registered nurses(RN) and recorded in electronic medical record.

Results: A total of 133 patients were enrolled. Stenosis was found in 96 patients (72.2%) in 1 site and 37 (27.8%) in 2 or more multi-sites. Primary outcomes are the degree of pain expressed by NRS and VAS according to each variable. Secondary outcomes are severe complications.
According to the analysis, both NRS and VAS scored statistically significantly higher (mean dose of midazolam; stenosis vs. thrombosis 2.39 vs. thrombosis). 2.73 (p=0.020), NRS and VAS; stenosis vs. thrombosis 2.65 vs. 4.3 (p=0.000), 2.98 vs. 4.24 (p=0.005)). In addition, in patients with more than 2 stenosis, both NRS and VAS scored high (NRS and VAS; stenosis 1 site vs. multi-site 2.56 vs. 3.40 (p=0.005), 2.73 vs. 3.64 (p=0.007)). There were no statistical differences in the left and right positions of the access, access type, gender, age difference, diabetes, and hypertension. During the procedure, severe cardiopulmonary complications were not observed.

Conclusions: As standard treatment, intravenous administration of midazolam and fentanyl requires active treatment in patients with endovascular dysfuntion, especially in the group with thrombosis or lesions at multiple sites.

Figure 1. NRS and Figure 2. VAS

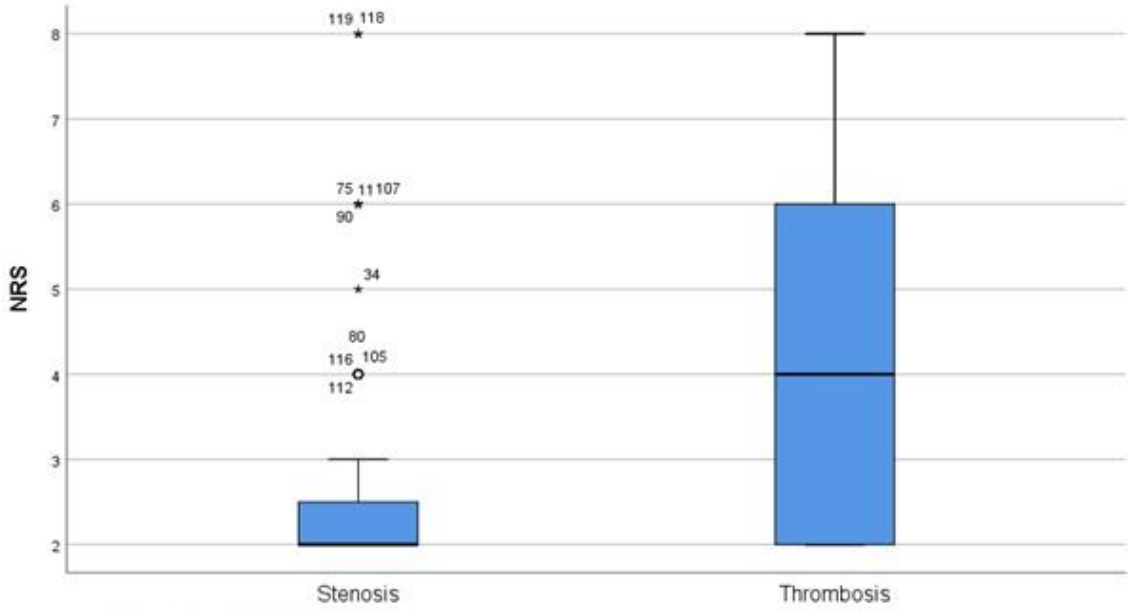

Fig.1. NRS

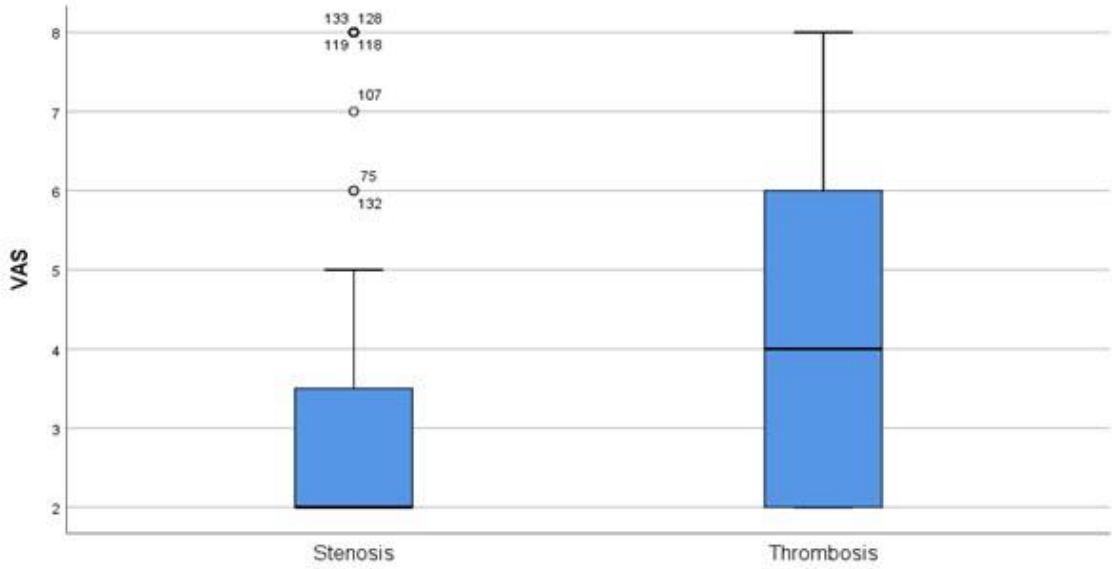

Fig.2. VAS