THE SEDATIVE EFFECT OF PROPRANOLOL ON CRITICALLY ILL PATIENTS

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Introduction: Hyperactive delirium is a common problem in the ICU. Analgesics, sedatives, and antipsychotics are frequently used to control it, but they can be insufficient in some cases. There has been interest in the use of alpha-2-adrenergic agonists. However, propranolol, a non-selective beta adrenergic antagonist with good penetration of the blood brain barrier, has not been investigated for this purpose. The purpose of this study was to determine whether propranolol has a sedative effect on ICU patients. We hypothesize that propranolol administration is associated with a reduction in the use of sedatives, analgesics, and antipsychotics.

Objectives: N/A

Methods: We retrospectively included all patients who were prescribed propranolol in the Medical-Surgical ICU in Toronto General Hospital, Toronto, Canada from January 1, 2010 to December 31, 2013. Patients were excluded if propranolol was started on the day of ICU admission or given for ≤ 48 hours, or if the patient was discharged from the ICU ≤ 48 hours of starting propranolol. We recorded the daily dose of sedatives, analgesics, and antipsychotics administered, and the Sedation Agitation Score (SAS), Intensive Care Delirium Screening Checklist (ICDSC), and Sequential Organ Failure Assessment (SOFA) scores each day for 6 days after starting propranolol. We then compared these daily doses and scores to the day before starting propranolol (D-1) using pairwise comparisons (paired t-test and Wilcoxon rank-sum tests as appropriate).

Results: Sixty-four patients met inclusion criteria. Thirty-eight (55%) episodes were excluded, leaving 27 patients (31 episodes). The administration of propranolol was associated with significant reductions in fentanyl equivalents (65%, P=0.009), midazolam equivalents (57%, p=0.048), propofol (16%, p=0.009), and haloperidol (44%, p=0.024) on Day 2. A stratified analysis showed that these decreases were found regardless of whether or not the SOFA score improved, except in the case of propofol. SAS and ICDSC scores had not changed significantly by day 2. In five cases (17%), patients had pressors started or increased ≥ 20% within 48 hours of propranolol administration, and in 1 case (3%) the patient developed a new AV block.

Conclusion: The use of propranolol was associated with significant reduction in sedative dose. A prospective study with protocized propranolol and sedative dosing will be needed to confirm this effect.

References: N/A