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105. Comparison of Serotonin and Norepinephrine Reuptake Inhibitor Toxicity in Overdose Using Toxicology Investigators Consortium Database

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Background: Venlafaxine is anecdotally thought to cause more toxicity than other atypical antidepressants of the serotonin and norepinephrine reuptake inhibitor (SNRI) class, however, no data exists comparing outcomes of overdoses of these agents.

Methods: This study utilized the Toxicology Investigators Consortium's prospective case registry to evaluate single sub- stance SNRI intentional overdoses from 2012 to 2023. We included patients aged > 12 years. Due to the low numbers, we excluded eight desvenlafaxine and one levomilnacipran expo- sure. We compared the rates of tachycardia (HR > 140 bpm), seizures, QRS prolongation, serotonin syndrome, intubation, and ICU admission between duloxetine and venlafaxine.

Results: We included 123 venlafaxine and 46 duloxetine overdoses. Venlafaxine had higher rates of tachycardia (n= 43, 35.0% vs. n = 8, 17.4%; p = 0.027) and seizure (n =22, 17.9% vs. n = 2, 4.3%; p = 0.025). Rates of QRS prolongation > 120 ms (4.9% vs. 2.2%), serotonin syndrome (17.9% vs. 26.1%), intubation (8.9% vs. 6.5%), and ICU admission (3.3% vs. 4.3%) were not statistically different between venlafaxine and duloxetine overdose. The most frequent reported therapies were benzodiazepines (43.1% vs. 28.3%; p = NS) and cyproheptadine (4.1% vs. 6.5%; p = NS) in venlafaxine and duloxetine overdoses, respectively.

Conclusion: In retrospective database comparison, venlafaxine overdose is associated with increased rates of tachycardia and seizures but not QRS prolongation, serotonin syndrome, intubation, and ICU admission when compared to duloxetine overdose. Given that duloxetine has more potent inhibition of serotonin and norepinephrine reuptake, this data would suggest that there might be an additional unknown mechanism of epileptogenesis in venlafaxine toxicity. However, we were unable to assess dose response in the clinical presentation.