The objective of this study was to determine the safety and efficacy of using sodium bicarbonate catheter lock solution (SBCLS) as a means of preventing HD catheter loss due to CRT and CRBSI” El-Hennawy et al (2019).

Abstract:

BACKGROUND: There is no ideal lock solution that prevents hemodialysis (HD) catheter loss due to catheter-related thrombosis (CRT) and catheter-related bloodstream infection (CRBSI). Catheter loss is associated with increased hospitalization and high inpatient costs. Sodium bicarbonate (NaHCO3) demonstrates anti-infective and anticoagulation properties with a good safety profile, making it an ideal lock solution development target. The objective of this study was to determine the safety and efficacy of using sodium bicarbonate catheter lock solution (SBCLS) as a means of preventing HD catheter loss due to CRT and CRBSI.

METHODS: The study took place in a community hospital in Brooklyn, NY, USA. All admitted patients ≥18 years of age who needed HD treatment through CVC were included in the study. 451 patients included in the study were provided SBCLS or NSCLS post-dialysis. Catheter loss due to CRT or CRBSI was evaluated over a period of 546 days.

RESULTS: A total of 452 patients met the criteria; 1 outlier was excluded, 226 were in the NSCLS group and 225 were in the SBCLS group. There were no significant differences between groups in comorbidities at the outset. The NSCLS group had CRT and CRBSI rates of
4.1 and 2.6/1000 catheter days (CD), respectively, compared with 0.17/1000 CD for both outcomes in the SBCLS group. SBCLS patients had a significantly reduced catheter loss rate due to CRT (P < 0.0001) and CRBSI (P = 0.0004). NSCLS patients had higher odds of losing their catheter due to CRT {odds ratio [OR] 26.6 [95% confidence interval (CI) 3.57-198.52]} and CRBSI [OR 15.9 (95% CI 2.09-121.61)] during the study period. CONCLUSION: The novel approach of using SBCLS was found to be safe and was statistically superior to normal saline in preventing HD catheter loss due to CRT and CRBSI. NaHCO3 solution is inexpensive, readily available in various settings and holds the potential to decrease hospitalization, length of stay and dialysis-related costs. TRIAL REGISTRATION: Maimonides Medical Center Investigational Review Board, Study IRB 2015-06-25-CIH. ClinicalTrials.gov identifier: NCT03627884.

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