TOOLS FOR PRACTICE #368 | June 24, 2024

Sodium Restriction in Heart Failure: Beneficial or pouring salt in the wound?

CLINICAL QUESTION

Does sodium restriction improve outcomes in patients with chronic heart failure?

BOTTOM LINE

In patients with chronic heart failure, restricting dietary sodium to <2 grams/day does not reduce death or hospitalization compared with 2-3 grams/day.

EVIDENCE

- Five systematic reviews assessed dietary sodium restriction in patients with heart failure (5-17 randomized controlled trials [RCTs], 479-1683 participants).[1-4]
    - Focusing on the most comprehensive systematic review:[1]
        - Sodium restriction <2 grams/day in 11 RCTs and 2-3 grams/day in 6 RCTs; usual care ranged from 2-5 grams/day (when reported) with duration 1 week to 1 year; 13 RCTs in outpatients, 4 in inpatients.
        - No significant differences in death (all-cause or cardiovascular) or hospitalizations (all-cause or cardiovascular).
    - Sodium restriction increased mortality and/or hospitalization in three reviews:[2-4]
        - Driven by 2-4 RCTs with several issues from same authors: Including duplicate reporting, inadequate background medications, very high furosemide doses (250-1000 mg/day) and tight fluid restriction (<1 L/day) not representative of current practice.[5,6]
- Focusing on the largest (806 patients) unblinded RCT, SODIUM-HF:[7] Patients with chronic heart failure with any ejection fraction (>99% New York Heart Association class 2-3) and baseline dietary

sodium intake ~2.2 grams/day randomized to dietician support targeting sodium <1.5 grams/day (achieved ~1.7 grams/day) versus usual care (achieved ~2.1 grams/day). At 1 year:
    - Death or cardiovascular emergency department visit or hospitalization: 15% versus 17% (usual care), not statistically different.
- Sodium restriction does not consistently improve heart failure symptoms or quality of life.[1,4,7]

CONTEXT

- Sodium restriction theory: Renin-angiotensin-aldosterone system activation in heart failure results in sodium and water retention. Yet, excess sodium restriction could also exacerbate activation.[5]
- A previous Tools for Practice initially suggested sodium restriction worsened outcomes, but cautioned about flawed RCTs and was later updated after the original supporting systematic review was retracted.[5]
- The average Canadian consumes ~2.8 grams/day of sodium.[8]
- Canadian guidelines recommend restricting sodium intake to 2-3 grams/day, whereas American and European guidelines recommend avoiding "excess" sodium intake without defining specific amounts.[9]
- In patients hospitalized for acute heart failure, restricting sodium (<800 mg/day) and fluids (<800 mL/day) increased thirst without reducing signs or symptoms of congestion.[10]

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