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Effects of Dapagliflozin on congestion assessed by remote pulmonary artery pressure monitoring

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Background: CardioMEMS and Cordella pulmonary artery Sensor devices are implantable systems that provide real-time remote monitoring of pulmonary artery pressure (PAP). Though the SGLT2i dapagliflozin demonstrated to reduce adverse events in HFrEF, its effect on congestion remains to be determined.

Purpose: To explore the effects of SGLT2i effects on congestion directly.

Methods: Single center open label observational pilot trial, to investigate the effects of dapagliflozin in consecutive HFrEF patients with elevated PAP between October and December 2019, previously implanted with CardioMEMS or Cordella Sensor. Changes in PAP were evaluated with an area under the curve methodology to estimate the total sum increase or decrease in pressures (mm Hg-day) for 7 days before and after starting dapagliflozin relative to the first day of each period.

Results: Nine patients (72±10 years, NTproBNP 1027±510 pg/mL, eGFR 45±15 ml/kg/m2 , LVEF 35±10%), all on optimal guideline-directed therapy were included. The mean PAP was reduced from 42 ± 9.16 to 38 ± 9.95 mmHg with dapagliflozin therapy  (p<0.05). The average AUC for the week leading to dapagliflozin therapy remained unchanged compared to the drop observed for the week after therapy (P<0.05, Figure). Interestingly, the drop in PAP occurred within the first two days of dapagliflozin and remained stable for the week following the start of the therapy.

Conclusion. This is the first study to demonstrate a direct effect of dapagliflozin on achieving effective hemodynamic decongestion. Hereby, providing further mechanistic data regarding the potential mechanisms of SGLT2i benefits on heart failure.
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