Serum sclerostin levels are reduced by treatment with online hemodiafiltration

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Background

The glycoprotein sclerostin (22kD) is a soluble inhibitor of osteoblast function which has been associated with vascular calcifications in patients with CKD-MBD. In hemodialysis (HD) patients, sclerostin levels appear positively related to survival.

Objective

Identify whether serum sclerostin levels over time are different for hemodiafiltration (HDF) or low-flux HD).

Table 1: baseline characteristics

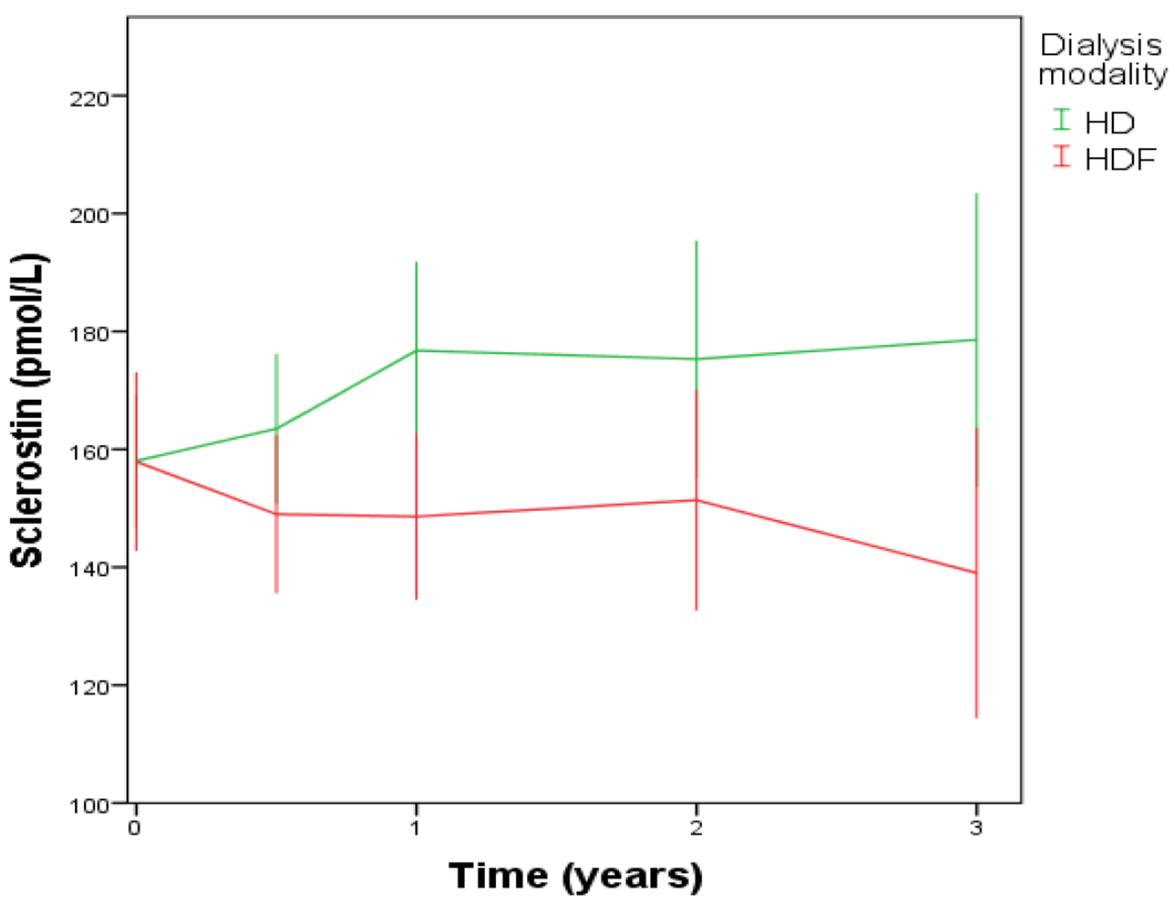
Characteristic	Entire cohort (n=714)	Analyzed patients (n=396)
Age (yrs)	64.1 (13.7)	63.6 (13.9)
Gender (male)	445 (62.3%)	244 (61.6%)
BMI (kg/m^2)	25.4 (4.8)	25.0 (4.8)
RKF (>100mL/24h)	376 (52.7%)	223 (56.3%)
Dialysis vintage (yrs)	2.0 (1.0-4.0)	1.8 (0.9-3.3)
Kt/V	1.40 (0.22)	1.38 (0.21)
Albumin (g/L)	40.4 (3.8)	40.0 (4.0)
PTH (pmol/L)	20 (10-35)	21 (11-36)
Assigned to HDF	358 (50.1%)	198 (50.0%)

Data are shown as mean (sd), number (%) or median (IQR)

Methods

Data were used from the CONvective TRAnsport STudy (CONTRAST, NCT00205556), a RCT comparing HDF with HD. In a subset of patients, serum sclerostin was measured with the BioMedica Sclerostin ELISA kit at baseline and at 6, 12, 24 and 36 months. Data were analyzed using linear mixed effects models with continuous autoregressive covariance matrices. Using an interaction term, it was checked whether the course of sclerostin over time was different for participants treated with either HD or HDF.

Figure 1: Serum sclerostin levels over time in HD and HDF (mean with 95% confidence intervals)



Results

Mean age of 396 analyzed patients was 63.6±13.9 years and 61.6% was male. Median serum sclerostin concentration was 139 pmol/L at baseline and increased non-significantly over time in patients treated with HD (Δ +2.89 pmol/L/year, 95% CI –0.49 to +6.27, p=0.09). In patients treated with HDF, serum sclerostin decreased modestly but significantly over time (Δ –4.44 pmol/L/year, 95% CI –8.04 to –0.85, p=0.02). As these slopes are in opposite direction (p for interaction = 0.004) and convection is the main difference between HD and HDF, our data indicate that sclerostin is removed by convective transport.

Conclusions

Treatment with HDF decreases serum levels of sclerostin over time. The clinical implications of these findings warrant further research.

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