Kajian turnover tulang pada subyek diabetes melitus tipe 2 perempuan pramenopause : kadar tumor necrosis factor- dan sclerostin serum = Study of bone turnover in premenopausal women subjects of type 2 diabetes mellitus : levels of serum tumor necrosis factor- and sclerostin

Sugiarto, author

Abstrak

Latar Belakang: Subyek diabetes melitus (DM) tipe 2 mengalami peningkatan risiko fraktur akibat penurunan kekuatan tulang. Bone mineral density (BMD), sebagai parameter kuantitas tulang, tidak dapat menggambarkan fragilitas tulang pada subyek DM tipe 2 karena menunjukkan hasil yang normal atau meningkat dibandingkan dengan subyek bukan DM, sehingga peningkatan resiko fraktur pada subyek DM tipe 2 lebih disebabkan oleh penurunan kualitas tulang. Salah satu unsur penentu kualitas tulang adalah turnover tulang. Beberapa faktor yang berpengaruh pada turnover tulang, antara lain tumor necrosis factor- (TNF-) dan sclerostin. Kajian TNF- dan sclerostin pada subyek DM perempuan pernah dilaporkan namun melibatkan subyek pascamenopause, sehingga tidak dapat dipisahkan efek TNF- dan sclerostin terhadap turnover tulang.
Tujuan: Penelitian ini bertujuan untuk mendapatkan profil kadar TNF- dan sclerostin serum pada subyek perempuan pramenopause DM tipe 2 dan bukan DM.
Metode: Studi potong lintang dilakukan pada 80 subyek perempuan pramenopause yang terdiri dari ini 40 subyek DM Tipe 2 dan 40 subyek bukan DM. Data yang dikumpulkan antara lain: karakteristik subyek, riwayat penggunaan obat-obatan, HbA1C, SGPT, kreatinin, dan eGFR. Pemeriksaan TNF- dan sclerostin serum dilakukan dengan metode enzyme-linked immunosorbent assay (ELISA).
Hasil: Median (rentang interkuartil) kadar TNF- serum pada subyek DM tipe 2 [43,0 pg/mL (14,4-101,31)], lebih tinggi dibandingkan subyek bukan DM [23,86 pg/mL (11,98-78,54)] namun perbedaan tersebut tidak bermakna (p=0.900). Rerata (simpang baku) kadar sclerostin serum pada subyek DM tipe 2 [132,05 pg/mL (SB 41,54)], lebih tinggi bermakna (p<0.001) dibandingkan subyek bukan DM [96,03 pg/mL (SB 43,66)]. Tidak didapatkan hubungan antara kadar TNF- dan sclerostin serum baik pada subyek DM tipe 2 (p=0,630) maupun subyek bukan DM (p=0,560).
Kesimpulan: Subyek perempuan pramenopause DM tipe 2 memiliki kadar TNF- serum lebih tinggi namun tidak bermakna dibandingkan dengan subyek bukan DM. Subyek perempuan pramenopause DM tipe 2 memiliki kadar sclerostin serum lebih tinggi bermakna dibandingkan dengan subyek bukan DM.
.....Background: The subject of type 2 diabetes mellitus (T2DM) has an increased risk of fracture due to a decrease in bone strength. Bone mineral density (BMD), as a parameter of bone quantity, cannot describe bone fragility in T2DM subjects because it shows normal or increased results compared to non-DM subjects, so an increased risk of fracture in T2DM subjects is due to a decrease in

bone quality. One element that determines bone quality is bone turnover. Some factors that influence bone turnover include tumor necrosis factor- (TNF-) and sclerostin. TNF- and sclerostin studies in female DM subjects have been reported but involve postmenopausal subjects, so that the effects of TNF- and sclerostin cannot be separated from bone turnover.
Objective: This study aims to obtain a profile of serum TNF- and sclerostin levels in premenopausal women with T2DM and non-DM.
Method: A cross-sectional study was carried out on 80 premenopausal female
subjects consisting of 40 T2DM subjects and 40 non-DM subjects. Data collected included: subject characteristics, history of drug use, HbA1C, SGPT, creatinine, and eGFR. Serum TNF- and sclerostin examination was carried out by the enzyme-linked immunosorbent assay (ELISA) method.
Results: The median (interquartile range) of serum TNF- levels in T2DM
subjects [43.0 pg/mL (14.4-101.31)], was higher than non-DM subjects [23.86
pg/mL (11.98 -78.54)] but the difference was not significant ($p= 0.900$). The mean (standard deviation) of serum sclerostin levels in T2DM subjects [132.05 pg/mL (SD 41.54)], was significantly higher ($p< 0.001$) than non-DM subjects [96.03 pg/mL (SD 43.66)]. There was no association between serum TNF- and sclerostin levels in both T2DM subjects ($p= 0.630$) and non-DM subjects ($p= 0.560$).
Conclusions: Subjects of premenopausal women with T2DM had higher serum
TNF- levels but were not significant compared to non-DM subjects. Subjects of premenopausal women with T2DM had significantly higher serum sclerostin
levels compared to non-DM subjects.