Prevalence and Risk Factors of Non-Alcoholic Fatty Liver Disease (NAFLD) Defined by Non-invasive Assessment in Type 2 Diabetes Mellitus (T2DM) Patients with Normal Serum Aminotransferase (AST/ALT) Levels

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Background and aim: NAFLD is more common and more severe in patients with T2DM, however the prevalence and severity of NAFLD in T2DM patients with normal AST/ALT is unclear. This study was aimed to evaluate prevalence and risk factors of NAFLD and liver fibrosis in T2DM patients with normal AST/ALT.

Methods: T2DM patients with persistently normal AST/ALT ($\leq$40 IU/L for $\geq$2 times during $\geq$ 6 months) were evaluated by controlled attenuation parameter and transient elastography (CAP-TE) by an experienced operator (TT.) at Rajavithi Hospital, Bangkok, between Nov-2016 and Mar-2017. Exclusion criteria were T1DM, significant alcohol drinking, chronic viral hepatitis, and the use of medications that may affect NAFLD. The cut-offs for steatosis were CAP 215 dB/m for S1 and CAP 252 dB/m for S2, whereas for fibrosis were TE 7.0 kPa for significant fibrosis and TE 10.0 kPa for advanced fibrosis (NAFLD defined by $\geq$S1).

Results: 105 patients were included; 69.5% were women with median age of 62 (33-80) years. Median BMI was 26.5 (16.8-42.2) kg/m^2 and 59.0% were obese (BMI $\geq$25). The median duration of T2DM was 10 years (0.25-30) years and 42.9% have microvascular complications. Prevalence of NAFLD was 81.0% (62.9% were $\geq$S2). Prevalence of NAFLD with significant fibrosis and advanced fibrosis was 23.8% and 13.3%, respectively. Significant predictors of NAFLD by univariate analysis for steatosis were female, BW, BMI, and waist circumference (WC), HbA1c and triglyceride level; for significant fibrosis were BW, BMI and WC and for advanced fibrosis were BW and BMI.

Conclusions: NAFLD and fibrosis is relatively common among T2DM patients with normal AST/ALT. Obesity appears to be a good predictor for NAFLD/fibrosis in this population.