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VITAMIN D DEFICIENCY IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE AND TYPE 2 DIABETES MELLITUS

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INTRODUCTION

Low vitamin D levels have been associated with type 2 diabetes mellitus and non-alcoholic fatty liver disease. Insulin resistance, inflammation and oxidative stress have been suggested to be responsible for the development of NAFLD. These mechanisms are linked to vitamin D's anti-inflammatory effect. Vitamin D deficiency is highly prevalent among patients with T2DM and NAFLD and is an independent risk factor for developing NAFLD in patients with T2DM.

METHODOLOGY

The study aimed to determine the prevalence and associated risk factors of vitamin D deficiency in patients with NAFLD and T2DM. We conducted a cross-sectional study in patients with T2DM (n=110). The patients were divided into 2 groups: NAFLD (n=86) and no NAFLD (n = 24). The patients within the NAFLD group were further divided into 2 groups (vitamin D deficient and non-deficient). Serum total 25 (OH) D3 was analysed using electrochemiluminescence immunoassay (Roche), and deficiency was defined as a level of <50 nmol/L. Diagnosis of NAFLD was based on the abdominal ultrasound performed by 2 experienced radiologists. Steatosis was defined as increased liver echogenicity.

RESULT

The prevalence of vitamin D deficiency in patients with T2DM and NAFLD was 52.3% (45/86), as compared to only 33.8% (8/24) in those without NAFLD. Vitamin D level was significantly lower in patients with NAFLD as compared to those without NAFLD (51.53 ± 19.68 vs 60.61 ± 20.25, p <0.05). There was no difference in the age (57.74 ± 8.42 vs 57.96 ± 7.97 years, p = 0.91), gender (male 55.7% vs 70.8%, p = 0.18), BMI (28.99 ± 3.80 vs 28.24 ± 3.74 kg/m^2, p = 0.40), and diabetes duration (12.43 ± 7.92 vs 10.42 ± 6.51, p = 0.25), between the 2 groups. Multivariate analysis demonstrated that HbA1c (AOR 1.89; 95%CI 1.15-3.09; p = 0.01) and vitamin D deficiency were the independent risk factors for NAFLD (AOR 3.15 95%CI 1.10-9.04; p = 0.03), after adjustment for age, gender, diabetes duration and eGFR.

CONCLUSION

This study demonstrated a high prevalence of vitamin D Deficiency in patients with NAFLD and T2DM. In patients with T2DM, those with vitamin D deficiency were three times more likely to develop NAFLD. Vitamin D levels of <50 nmol/L and higher HbA1c were the two independent risk factors for developing NAFLD.