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## **25-Hydroxy-vitamin D<sub>3</sub> level is a predictor to insulin resistance in patients with hepatitis C virus-induced liver cirrhosis**

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### **Background**

There is an established relationship between liver disease and hepatogenous diabetes mellitus, and a growing evidence for the role of vitamin D deficiency in the pathogenesis of type 1 and type 2 diabetes mellitus. However, data on the impact of vitamin D serum level on insulin resistance among liver cirrhosis patients are lacking.

### **Objectives of the study**

The primary objective of the current study was to investigate the relationship between vitamin D status and insulin resistance among hepatitis C virus (HCV)-induced liver cirrhosis patients using a homeostasis model for assessment of insulin resistance (HOMA-IR). The secondary objectives were to assess the association between deterioration of liver function on the one hand and insulin resistance and vitamin D deficiency on the other.

### **Participants and methods**

Fifty patients with biopsy-proved HCV-induced liver cirrhosis were enrolled in this cross-sectional study. Routine clinical, laboratory, and imaging workout was performed to assess the degree of liver decompensation using the model of end-stage liver disease (MELD) score and the Child–Turcotte–Pugh Score (CTPS). Serum level of 25-hydroxy-vitamin D<sub>3</sub> [25(OH)D<sub>3</sub>] was estimated. Fasting plasma glucose and fasting insulin were also measured to calculate HOMA-IR as an indicator of insulin resistance. Patients were subclassified according to serum 25(OH)D<sub>3</sub> levels into tertiles, according to the MELD score into three groups, and according to CTPS into Child A, B, and C.

### **Results**

A significant inverse correlation was found between serum 25(OH)D<sub>3</sub> level and insulin resistance as assessed by HOMA-IR, whether using one-by-one correlation ( $r = -0.976$ ,  $P = 0.000$ ) or using 25(OH)D<sub>3</sub> tertiles' correlation ( $r = -0.830$ ,  $P = 0.000$ ). Linear multiple regression analysis determined low serum 25(OH)D<sub>3</sub> level as an independent predictor for increase in HOMA-IR among HCV-induced liver cirrhosis patients. No significant association was identified between low serum 25(OH)D<sub>3</sub> level and the severity of liver dysfunction as assessed by the MELD score or CTPS.

### **Conclusion**

The present study showed that low serum 25(OH)D<sub>3</sub> level was an independent predictor for insulin resistance among patients with HCV-induced liver cirrhosis.