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A New Formula For Estimation Of Standard Liver Volume Using Liver Height And Thoracic Width

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Background : Precise estimation of the standard liver volume (SLV) is crucial in decision making regarding major hepatectomy and living donor liver transplantation. This study aimed to propose an accurate and efficient formula for estimating the SLV in the Korean population

Methods : We created a regression model for SLV estimation using a data set of 230 Korean patients with healthy livers. The proposed model was cross validated using a different data set of 37 patients with healthy livers. The total liver volume (TLV), except for the volume of liver blood vessels, was measured through computed tomography volumetry as the dependent variable. Various anthropometric variables, liver height (LH), thoracic width (TW), age, and sex (0, female and 1, male) were considered as candidates for independent variables. We conducted stepwise regression analysis to identify variables to be included in the proposed model

Results : A new formula was established; SLV = −1,275 + 9.85 × body weight (BW, kg) + 19.95 × TW (cm) + 7.401 × LH (mm). The proposed formula showed the best performance among existing formulas over the cross-validation data set.

Conclusions : The proposed formula derived using BW, TW, and LH estimated the TLV in the cross-validation data set more accurately than existing formulas.

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