



Downregulation of serum DKK-1 predicts poor prognosis in patients with papillary thyroid cancer

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ABSTRACT. The Wnt inhibitor dickkopf-1 (DKK-1) has been shown to be closely correlated with tumor initiation and progression in various types of cancers. However, the serum level of DKK-1 in patients with papillary thyroid cancer (PTC) and its potential clinical significance is poorly understood. Enzyme-linked immunosorbent assay (ELISA) was used to evaluate the level of serum DKK-1 in patients with PTC (N = 132) and healthy controls (N = 40). The association between serum DKK-1 level and clinicopathological parameters of PTC was examined and independent prognostic markers for PTC were identified. The mean serum DKK-1 level was significantly lower in patients with PTC than healthy controls (44.64 ± 15.13 and 85.51 ± 9.94 ng/mL, respectively; $P < 0.01$). Following treatment, the mean serum DKK-1 level in PTC patients significantly increased (67.03 ± 17.09 ng/mL; $P <$

0.01). Serum DKK-1 level was associated with various PTC clinical features including tumor size ($P = 0.003$), lymph node metastasis ($P = 0.001$), and tumor-node-metastasis stage ($P = 0.004$). Survival analysis revealed that PTC patients who had lower serum DKK-1 levels suffered both poorer overall survival ($P = 0.036$) and relapse-free survival ($P = 0.015$). Moreover, serum DKK-1 levels were an independent risk factor for predicting the prognosis of PTC ($P = 0.031$). In conclusion, low DKK-1 serum levels are associated with poor prognosis in PTC patients and DKK-1 could potentially be used as a biomarker leading to earlier diagnosis of PTC.

Key words: DKK-1; Papillary thyroid cancer; Prognosis; Serum