

# Biomarkers for Cancer in DM Patient

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Subjects with diabetes are associated with an increased risk of the development of and mortality associated with various cancers, including colorectal cancers, hepatocellular carcinoma, and others. Screening of cancers, prediction of its occurrence, and prediction of its prognosis are still difficult and unsatisfactory. Biomarkers may have some roles for these purposes.

Recently, we have demonstrated that serum vascular adhesion protein-1 (VAP-1) can predict cancer mortality in subjects with type 2 diabetes independent to age, gender, smoking, and obesity. VAP-1 is involved in angiogenesis, as well as growth and metastases of cancer cells. Serum VAP-1 originates from endothelial cells, adipocytes, smooth muscle cells, and other cells, and may be a measure of tissue expression of VAP-1. Furthermore, serum VAP-1 can predict colorectal cancer-related mortality in subjects with type 2 diabetes. In subjects with colorectal cancers, serum VAP-1 can also predict their mortality, independent of age, gender, and cancer staging. The prediction ability is enhanced by the information of serum VAP-1.

Proteinuria, an early sign of diabetic nephropathy, is one of the diagnostic criteria for chronic kidney diseases (CKD). We have found that proteinuria and CKD can predict cancer mortality in subjects with type 2 diabetes, independent of various established risk factors. Proteinuria and CKD can improve the prediction ability by traditional risk factors. Inflammation and dysfunction of renin-angiotensin system could be the two key pathogenesis underlying the link between proteinuria, CKD, and cancers.

Further investigations should focus on how to use the information provided by various biomarkers in clinical situations.