



# Multivariate analysis of molecular markers in peripheral blood associated with recurrence and metastasis of hepatocellular carcinoma

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**ABSTRACT.** Invasion, metastasis, and recurrence are the most common causes of death in patients with hepatocellular carcinoma (HCC) and are therefore critical factors for both therapy and prognosis. Current methods for diagnosis of HCC rely mainly on serological markers such as alpha-fetoprotein and liver enzymes, together with physical assessment and imaging techniques. The availability of more accurate serum markers may facilitate screening and early diagnosis, which will improve prognosis. This retrospective cohort analysis included 50 consecutive patients with cirrhosis and single or multifocal HCC and 40 control subjects with no liver disease or risk factors for viral hepatitis. Expression of epidermal growth factor-like domain 7 (EGFL7), osteopontin (OPN), and prostaglandin E2 (PGE2) were

detected using an enzyme-linked immunosorbent assay. The mean serum levels of EGFL7, OPN, and PGE2 in the HCC group were 132.11 pg/mL, 11.77 ng/mL, and 179.37 pg/mL, respectively, which were all significantly higher than the levels in the control group (23.03 pg/mL, 2.31 ng/mL, and 47.36 pg/mL, respectively;  $P < 0.001$ ). Serum levels of EGFL7, OPN, and PGE2 levels may thus be useful for screening and surveillance of HCC among high-risk populations, and have the potential to improve prognosis of these patients.

**Key words:** Hepatocellular carcinoma; EGFL7; OPN; PGE2; Marker; Multivariate analysis