

## Association of Epstein-Barr virus and Cholangiocarcinoma

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**Background:** Epstein-Barr virus (EBV) was found to be associated with many cancers. Not only Thailand is an endemic area for EBV infection, but also the prevalence of cholangiocarcinoma is high. However, to date, there is no data of Epstein-Barr virus in patients with intrahepatic cholangiocarcinoma. The objective of this study was to determine the prevalence of EBV in intrahepatic cholangiocarcinoma in the Thai population.

**Methods:** Formalin-fixed paraffin-embedded (FFPE) tumor samples were retrieved. EBV status was assessed EBV-encoded small RNA (EBER) in situ hybridization. The association between EBV status, clinicopathological characteristics were analyzed using Fisher's exact test, and survival analysis was done using the Kaplan-Meier method.

**Results:** Out of 40 intrahepatic cholangiocarcinoma tumor samples, 3 (7.5%) were positive for EBV by EBER in situ hybridization. The median age of EBV-positive patients was lower than the EBV-negative group (52 vs 64 years). All three EBV-positive intrahepatic cholangiocarcinoma cases presented in stage I (T1N0M0). Among the EBV-positive patients, 2 were well-differentiated adenocarcinoma and 1 was mucinous cystadenocarcinoma. There was a trend towards a better survival was seen in EBV-positive patients ( $p=0.085$ ) with the median overall survival of not reached vs 19.9 months in EBV- positive and negative respectively.

**Conclusions:** EBV-associated intrahepatic cholangiocarcinoma is rare with the prevalence of EBV- 7.5%. EBV positive patients tend to present at a very early stage and carry a good prognosis.

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