Isocitrate Dehydrogenase1 and 2 Mutations in Thai Patients with Cholangiocarcinoma

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The Thai Cancer, 2017, 31.60.013

**Background:** Mutation of Isocitrate dehydrogenase 1 and 2 gene is common in glioma, AML and chondrosarcoma. Previous studies showed 20% prevalence in intrahepatic CCA but showed 2-3% prevalence in Opisthorchis viverrini associated with Cholangiocarcinoma. We conducted this study to explore IDH1/2 mutations in Thai patients with cholangiocarcinoma.

**Method:** We collected 50 surgical samples from tumor diagnosed cholangiocarcinoma at King Chulalongkorn Memorial Hospital between 2008-2013. After DNA extraction by QIAamp DNA FFPE Tissue kit. The analysis of IDH1 mutation at hotspot R132 and IDH2 mutation at hotspot R172 were performed by Pyrosequencing technology (PyroMark Q96ID). We analysed the association between the outcome of mutation in IDH1/2 and clinicopathology by Independent T-test, Chi-square test, Fisher’s exact test and Kaplan-Meier method.

**Results:** IDH1/2 mutations were detected in 18 (36%) samples. IDH1 was found in only one samples. Among 17 detected IDH2 mutation samples, IDH mutation R172G was found in 15 (88%) samples. There were 11 (40.7%) and 7 (30.4%) IDH1/2 mutations in intrahepatic and extrahepatic CCA, respectively, p=0.323. There were 9 (52.9%) and 9 (28.1%) IDH1/2 mutations in patients from Northeast and other regions, respectively, p=0.054. Patients with IDH2 mutation had significantly longer overall survival, p=0.032.

**Conclusions:** IDH 2 mutation was high prevalent in Thai patients with cholangiocarcinoma including both intrahepatic and extrahepatic cholangiocarcinoma. R172G was particularly predominant in our analysis. These findings were still needed verification.