Risk Factors for Complications of Large Balloon Dilation in Removal of Bile Duct Stones

Ji Min Han, Hyuck Yong Kwon, Ho Hak Kim, Jung Hyun Yoo*, Tae Nyeun Kim*, Hyon Uk Ryu†, Hyun-Soo Kim†, Kwang Bum Cho‡, So Young Choi‡, Min-Kyu Jung‡, Chang Hun Yang‡

Department of Internal Medicine, Catholic University of Daegu School of Medicine, *Yeungnam University College of Medicine, †Daegu Fatima Hospital, ‡Keimyung University School of Medicine, §Kyungpook National University School of Medicine, Daegu, ¶Dongguk University College of Medicine, Gyeongju, Korea

Aim: We evaluated risk factors for complications related to large balloon dilation (LBD) and the outcomes of these complications.

Methods: From March 2006 to July 2010, we retrospectively studied LBD-related complications in consecutive patients treated at 6 institutions in Daegu and Gyeongbuk. All the patients who underwent LBD (≥12 mm) for common bile duct (CBD) stone removal were included. Complications included minor bleeding, major bleeding, pancreatitis, hyperamylasemia, and perforation. Outcomes included successful conservative management and death.

Results: Of 390 patients, 115 patients (126 cases, 29.5%) experienced one or more complication: minor bleeding in 65 (16.7%), major bleeding in 8 (2.1%), pancreatitis in 24 (6.2%), hyperamylasemia in 27 (7.0%), and perforation in 2 (0.5%). For minor bleeding, significant factors in univariate analysis were no need for mechanical lithotripsy, large endoscopic sphincterotomy, blended current, smaller maximal LBD diameter, less maximal pressure, and shorter duration of maximal pressure (p=0.000, 0.040, 0.000, 0.001, 0.000, and 0.000 respectively), and those in multivariate analysis were no need for mechanical lithotripsy (OR 5.46, 95% CI: 1.56→19.13) and blended current (OR: 3.44, 95% CI: 1.33→8.87). For major bleeding, significant factors in univariate analysis were male sex, jaundice, prolonged PT, APTT and common bile duct/LBD diameter ratio (p=0.024, 0.025, 0.021, 0.010, and 0.033, respectively) and that in multivariate analysis was male sex (OR: 5.70, 95% CI: 0.311→104.39). For pancreatitis, female sex was significant only in univariate analysis (p=0.001). There was no significant risk factor for hyperamylasemia and perforation. Except for one death from major bleeding, complications were managed conservatively.

Conclusions: Most complications of LBD are minor bleeding and can be managed conservatively. Risk factors for LBD-related complications are various and included both clinical and technical parameters.