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A Prospective Study Of Somatostatin As Pharmacologic Portal Modulation For Post-hepatectomy Liver Failure: A Pilot Study

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Background : Liver resection has been established as a curative treatment for various hepatic tumors. However, severe post-hepatectomy liver failure (PHLF) is a major cause of mortality and factor in choosing non-surgical palliative treatment. Postoperative excessive portal pressure could cause shear stress to the small remnant liver after extensive liver resection as contributing factor for developing the PHLF. This study aimed to report a prospective clinical trial to evaluate somatostatin's effect as pharmacologic portal modulation for severe PHLF.

Methods : This prospective study enrolled 20 patients who received somatostatin for the treatment of PHLF between 2016 and 2021. When the patients fulfilled the 50-50 criteria (serum bilirubin 〉2.9 mg/dL and prothrombin time 〈50%) on or before postoperative day 5, somatostatin (3.5 ug/kg/h) was administered by continuous infusion. The discontinuation criteria were as follows: serum bilirubin 〈2 mg/dL and prothrombin time ≥50%. Prospectively collected clinical characteristics, laboratory tests, postoperative morbidity, and mortality were evaluated.

Results : Among the study cohort, 17 (85.0%) patients underwent major liver resection with the extent above right hemihepatectomy, and 3 (15.0%) underwent preoperative right portal vein embolization. The median ICG-R15 was 13.0 (range 6.8-56.1), and the MELD score was 10 (6-24). After the operation, somatostatin was started on a postoperative day 1 (1-19) and was administered for 9 (2-29) days. There were no obvious side effects related to the somatostatin. The median hospital stay was 33 (8-249) days. The 30-day and 90-day mortality were both 10.0 %, and 17 (85.0%) patients recovered from severe PHLF.

Conclusions : Administration of somatostatin in the early postoperative period is considered safe and effective for the treatment of PHLF. Further large-scale comparative clinical trials are needed to validate this finding.

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