M1271

Internal Biliary Drainage Is Superior to External Drainage in Reversing the Serum Tumor Necrosis Factor-Alpha and the Expression of Inducible Nitric Oxide Synthase mRNA By Kupffer Cells in Rats with Obstructive Jaundice

Ying Meng, Yunsheng Yang, Wen Li

Background/Aims: We have found that internal biliary drainage is superior to external drainage in reversing elevated nitric oxide production by Kupffer cells in rats with obstructive jaundice in previous studies. The aim of this study is to explore the mechanism of the finding. Methods: Male adult Sprague-Dawley rats were randomly assigned to four groups: obstructive jaundice induced by bile duct ligation and resection (OJ; n = 10), sham operation (SH; n = 10), internal biliary drainage by stenting between the bile duct and the duodenum (ID; n = 10) and external drainage by exteriorizing the bile duct drainage tube at the nape of the neck (ED; n = 10). Both ID and ED were performed on day 7 after bile duct ligation, and sham operation was also performed on the same day for the SH and OJ rats. The rats were euthanized and samples were collected on day 14 after the first operation (i.e. day 7 after the second surgery). Kupffer cells were isolated by in situ hepatic perfusion and digestion with collagen IV, and purified by cell culture attachment. The expression of iNOS mRNA by the Kupffer cells was detected by reverse the transcription polymerase chain reaction (RT-PCR) and the serum tumor necrosis factor (TNF)-alpha concentrations were measured with ELISA. Results: The serum TNF-alpha level markedly increased in OJ rats (110.9 ± 26.2 pg/ml), although it was not statistically significant compared to the level in SH rats (91.1 ± 14.3 pg/ml). ED failed to reverse the elevation (118.6 ± 22.7 pg/ml) ($P > 0.05$, ED vs OJ). The TNF level was decreased in ID group (89.8 ± 22.7 pg/ml) and significantly lower than that in ED group ($P < 0.05$). Expression of iNOS mRNA by Kupffer cells was stronger in OJ group (0.69 ± 0.26) compared with SH group (0.32 ± 0.38) ($P < 0.05$). After relieving the OJ, the iNOS mRNA expression by the Kupffer cells from the ED group (0.86 ± 0.52) were not suppressed ($P > 0.05$, ED vs OJ). On the contrary, the iNOS mRNA expression by the Kupffer cells from ID group (0.49 ± 0.33) was depressed and significantly lower than that from ED group ($P < 0.05$). Conclusion: Internal biliary drainage is superior to external drainage in reversing the elevated serum TNF-alpha and in suppressing the iNOS mRNA expression by Kupffer cells in rats with obstructive jaundice. These findings seem to underlie our previous finding, that internal biliary drainage is superior to external drainage in reversing elevated nitric oxide production by Kupffer cells in rats with obstructive jaundice.

M1272

Does Pre-Transplant ERCP with Balloon Dilation Alone (ERCPBD), Stenting (ERCPST), Or PTC with Drainage Tubes (PTCDT) Decrease MELD Score Or Delay Liver Transplantation in Patients with Primary Sclerosing Cholangitis (PSC)?

Tong Jing, Brian C. Brauer, Nida Awadallah, Michael Baker, Gregory T. Everson, Evelina Fortajada, Yang K. Chen, Raj J. Shah

Background: Complications of PSC include refractory pruritus, jaundice, cholangitis, and cholangiocarcinoma. As disease progresses, liver transplantation is the treatment of choice. However, due to a limited donor pool, palliative treatments are often performed and include ERCPBD, ERCPST, or PTCDT. We aim to assess whether these interventions impact the MELD score or delay liver transplantation. Methods: A retrospective review of PSC patients who underwent liver transplantation at a single center was undertaken. A data collection sheet included actigall use, disease duration, serial MELD scores, ERCPBD, ERCPST (balloon dilation followed by stenting), PTCDT, and duration of stenting or drainage tube exchanges. Patient categorization: Group I did not undergo biliary intervention except for diagnostic purposes and Group II underwent ERCPBD, ERCPST, or PTCDT any time prior to transplant. Group II patients underwent scheduled sequential biliary interventions until resolution of dominant stricture or transplant. SASv9.1 package was used for performing a comparison of the means. Results: Between January 1999 and October 2006, 622 liver transplants were performed at our center. Of these, 62 patients (44M, 18F; median age 42) had PSC. Seven patients were excluded due to lack of available pre-transplant data. Group I had 26 patients and Group II had 29 patients (8 ERCPST, 4 ERCPBD, 12 PTCDT, 5 both ERCPST and PTCDT). A similar percentage of patients in each group were on Actigall. At time of transplant, 13/29 (45%) in Group II had stents or drains in place. The mean number of ERCPST was 2.1 (95% CI, 1.0, 3.2) and mean number of PTCDT was 4.9 drain exchanges (95% CI, 1.2, 8.6). The mean duration of ERCP/stent placement was 5.8 weeks (95% CI, 2.3, 9.3). The median years of disease duration until liver transplantation was 9.0 years, IQR (1.0-25.0) in Group I and 11.0 years, IQR (1.0-22.8) in Group II; the mean years of disease duration until transplantation was 10.5 years (± 7.6 years) in Group I and 9.8 years (± 5.0 years) in Group II ($p = 0.727$). 21 patients in Group II had available MELD data prior to biliary intervention and at time of transplant or greater than 3 months post completion of ERCPBD, ERCPST, or PTCDT (whichever came first). In this group, the mean MELD score increased from 13.5 to 15.0. Conclusions: 1. ERCP with balloon dilation alone, ERCP with stenting, or PTC with drainage tube exchanges does not appear to delay the time to transplantation or improve short-term changes to the MELD score 2. In PSC patients eligible for liver transplantation, biliary interventions should only be used for palliation of symptoms or evaluation of cholangiocarcinoma.

M1273

ERCP Management of the Pancreatic Sphincter in SOD Type II Patients: Clinical Outcome of Staged Sphincterotomy

Michele B. Delenick, Harsha Vittal, Douglas A. Howell, Michael K. Sanders, Kirk Bernadino, Andreas M. Stefan

Our clinically based algorithm for ERCP treatment of SOD II patients reported a low complication rate with an excellent outcome, suggesting manometry can be avoided at least initially (GIE 2004;59:99AB). We perform pancreatic duct endoscopic sphincterotomy (PDES) selectively initially and follow all others expectantly. We report results of this strategy. Patients/Methods: Retrospective review of a prospectively entered ERCP database from 8/03 to 9/05 identified 99 SOD II patients (pts) with a minimum follow-up of 12 months. Biliary sphincterotomy (BES) was performed on all and initial PDES on 16 for dilated PD (n = 12) or documented pancreatitis without biliary abnormalities (SOD IIP) (n = 4). Pancreatic stents or drains were placed only in the setting of PDES. Results: The total number of complications at 30 days was 3 (2 mild perforations, 1 delayed CVA), all in the BES alone group. There were no instances of post-ERCP pancreatitis in any of the 99 pts. In follow-up, 18 of the 83 (21.7%) pts initially receiving BES alone re-presented with documented pancreatitis (n = 5) or pain suspected to be of pancreatiobiliary origin (n = 13). At repeat ERCP, 12 of these 18 (66.7%) underwent PDES with nasopancreatic drainage (n = 7) or barbless stent placement (n = 5). Five underwent biliary ES extension alone and 1 had normal biductal manometry. Pancreatic or biductal manometry was used in 5 of these 18 (27.8%). There were no complications in the 18 repeat cases. No late complications among the total group have been observed. Outcome: In the group not requiring repeat ERCP, there was a 77% symptom response rate (resolved or improved) to the initial sphincterotomies (BES alone or biductal) without employing manometry. Among those patients undergoing delayed PDES, 82% had a positive response. Using this staged approach, this group of 99 SOD II pts underwent 117 ERCPs, including 5 manometries, experienced 3 complications and had a 78% response rate. With a median follow-up of 25 months, only 28/99 (28.3%), have required PDES. Most importantly, only 18/99 (18%) pts required subsequent ERCP and only 12/99 (12%) required interval PDES. Conclusions: Staged sphincterotomy for clinically diagnosed patients with SOD type II is a reasonable approach with a low complication rate and an excellent overall outcome. Manometry would appear to be optional for SOD II evaluation. Routine pancreatic stenting following biliary ES may not add to safety but is advocated after PDES. The overall need for PDES in the setting of clinical SOD II would appear to approach only 30%.

M1274

Detection of Sphincter of Oddi Fibrosis By Optical Coherence Tomography in Patients with Type I Dysfunction: An Experimental ''In Vivo'' Study

Benedetto Mangiavillano, Elena G. Spinapolice, Alberto Mariani, Paolo Giorgio Arcidiacono, Enzo Masci, Pier Alberto Testoni

Background: Sphyncter of Oddi (SO) dysfunction type 1 (SOD1) is a clinical condition characterized by biliary pain, associated with cholestatic and/or common bile duct (CBD) dilation. This disorder is determined by papillary fibrosis. Optical coherence tomography (OCT) is a new technique that permits high-resolution, real-time, imaging of tissue microstructures by a probe that can be inserted through a standard ERCP catheter during ERCP. OCT resolution is approximately 10 mm and the penetration depth is of about 1.5 mm. Only one ex-vivo study has been so far published about its use for the visualization of the SO structure. Aim: To evaluate the feasibility and accuracy of OCT in the detection of type 1 SOD. Materials and Methods: Multiple images of SO were acquired during ERCP with the OCT probe in 5 consecutive patients (3F 2M; mean age 79 ys) with clinical and secretin-MRCP diagnosis of type 1 SOD. OCT images were compared with those obtained from 5 control patients (2F 3M; mean age 68 ys) affected by pancreatic head adenocarcinoma not involving the papillary region (EUS) which undergone ERCP for stent insertion after OCT evaluation. OCT images were acquired using the pull-back maneuvre. Results: The normal SO layers' structure visualized at OCT was easily recognizable and charcterized by three layers: a) thin and regular hypo-reflective layer, 0.04 mm average thick (range 0.03-0.05), corresponding to the epithelium (inner layer); b) larger hyper-reflective layer, 0.29 mm average thick (range 0.27-0.30), corresponding to the submucosal connective tissue (intermediate layer); c) an hypo-reflective layer, recognizable up to a depth of about 1.5 mm, corresponding to the smooth muscular fibers (outer layer). Each layer had an homogeneous back-scattering infrared light signal and was easily recognizable. In SOD1 patients, differently from normals, OCT showed a major thickness of the 2 nd layer (mean: 0.51 mm, range: 47-57 mm) and a ''luminescent'' infrared light back-scattering, a sign of elevated hyper-reflectance. No differences were observed between SOD and normals in the thickness of the 1 st and the 3 rd layers. Conclusion: The major hyper-reflectance and thickness of the 2 nd SO layers in patients affected by SOD1 seems to be award to the connective fibrosis characterizing SOD1. OCT seems to be an useful technique for detecting sphincter of Oddi fibrosis.