Transjugular intrahepatic portosystemic shunt in refractory ascites: a meta-analysis

CRD summary
This review compared transjugular intrahepatic portosystemic shunt (TIPS) with large volume paracentesis (LVP) for refractory ascites. The authors concluded that TIPS reduces ascites compared with LVP, but increases encephalopathy and does not improve survival. The lack of detail on the review methods and the lack of a quality assessment make it difficult to assess the reliability of the authors' conclusions.

Authors' objectives
To compare the effects of transjugular intrahepatic portosystemic shunt (TIPS) with large volume paracentesis (LVP) plus concomitant intravenous albumin in patients with refractory ascites.

Searching
MEDLINE, Cancerlit and EMBASE were searched; the search terms were reported. Reviews and references of published RCTs were screened. Abstracts in English and French that were presented at named liver and gastroenterology congresses between 2002 and 2004 were checked.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies were eligible if they compared TIPS with LVP plus concomitant intravenous albumin. In the included studies, all patients were given a low sodium diet. The included studies differed in the criteria used to determine the use of diuretics after treatment.

Participants included in the review
Studies of patients with refractory ascites were eligible for inclusion. Studies in patients who had received a liver transplant were excluded. In the included studies, the mean age of the participants ranged from 50 to 61 years and the mean Child score ranged from 8.7 to 9.4. In two included studies not all patients had refractory ascites.

Outcomes assessed in the review
Studies were eligible if they assessed control of ascites, encephalopathy or survival. In the review, control of ascites was defined as the elimination of ascites or the presence of ascites not requiring paracentesis with or without diuretics at 4 and 12 months. Encephalopathy was defined as all clinically overt episodes, regardless of severity. Survival was defined as survival without transplant at 1 and 2 years.

How were decisions on the relevance of primary studies made?
Two reviewers conducted the searches and screened abstracts. The authors did not state any other details of the selection process.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted on an intention-to-treat basis, but the authors did not state how many reviewers performed the data extraction. The number of patients with each outcome of interest were extracted or calculated from reported...
percentages. For each study, the risk differences (RDs) for each outcome were calculated along with their associated 95% confidence intervals (CIs). For pooled relative risks (RRs) showing clear benefit, the number-needed-to-treat (NNT) was calculated.

**Methods of synthesis**

How were the studies combined?
The studies were combined by meta-analysis using fixed-effect (Peto method) and random-effects (DerSimonian and Laird) models. Detailed results were only reported for the random-effects model. Pooled mean differences between treatments and RRs with 95% CIs were calculated.

How were differences between studies investigated?
Statistical heterogeneity was tested using the Cochran statistic.

**Results of the review**

Five RCTs (n=330) were included.

Control of ascites was significantly more common with TIPS than with LVP at 4 months (66% versus 23.8%, RD 41.4%, 95% CI: 29.5, 53.2, P<0.001; NNT 3) and at 12 months (54.8% versus 18.9%, mean difference 35%, 95% CI: 24.9, 45.1, P<0.001).

Encephalopathy was significantly more common with TIPS than with LVP (54.9% versus 38.1%, RD 17%, 95% CI: 7.3, 26.6, P<0.001).

There was no statistically significant difference between TIPS and LVP groups for survival at 1 year (61.7% versus 56.5%, RD 3.2%, 95% CI: -14.7, 21.9) and 2 years (50% versus 42.8%, RD 6.8%, 95% CI: -10, 23.6).

No statistically significant heterogeneity was found for any of the outcomes.

The results were similar for the fixed-effect meta-analyses.

**Cost information**

One included RCT found that the costs of the procedures were 44 to 103% greater for patients treated with TIPS compared with those treated with LVP.

**Authors’ conclusions**

Compared with LVP, TIPS reduced ascites but increased encephalopathy and did not improve survival.

**CRD commentary**

The review question was clear in terms of the study design, participants, interventions and outcomes. Several relevant sources were searched and attempts were made to locate unpublished studies, thus limiting the possibility of publication bias. The authors attempted to reduce language bias by including publications in two languages. Publication bias was not assessed. Two reviewers conducted searches but it was unclear if they performed these independently. No other details were reported of the methods used to select studies, and the methods used to extract data were not fully described. Therefore, it is not known whether any efforts were made to reduce errors and bias. Although only RCTs were included, the quality of the included studies was not assessed.

The studies were appropriately pooled in meta-analyses, statistical heterogeneity was assessed and meta-analysis graphs were presented. However, the lack of reporting of review methods and the lack of a quality assessment make it difficult to assess the robustness of the authors’ conclusions.
Implications of the review for practice and research
Practice: The authors did not state any implications for practice.
Research: The authors stated that future RCTs should assess the benefit of covered TIPS in patients with refractory ascites, and should try to identify which patients are most suitable for this treatment.

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