

REVIEW ARTICLE

A systematic review and meta-analysis of the utility of repeated versus single hepatic resection for colorectal cancer liver metastases

Elena F. Wurster^{1,2,*}, Solveig Tenckhoff^{2,*}, Pascal Probst^{1,2}, Katrin Jensen³, Eva Dölger³, Phillip Knebel^{1,4}, Markus K. Diener^{1,2}, Markus W. Büchler¹ & Alexis Ulrich¹

¹Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Im Neuenheimer Feld 110, ²Study Center of the German Surgical Society, ³Institute of Medical Biometry and Informatics, University of Heidelberg, Im Neuenheimer Feld 130.3, and ⁴Clinical Study Center, University of Heidelberg, Im Neuenheimer Feld 110, 69120 Heidelberg, Germany

Abstract

Background: Recurrence of colorectal liver metastases after a first hepatectomy is common (4–48% of patients). This review investigates the utility of repeated hepatic resection of colorectal liver metastases.

Methods: A systematic search of the literature was performed in the Cochrane Library, MEDLINE, EMBASE, and trial registers. All studies comparing repeated hepatic resection for colorectal liver metastases with patients who underwent only one hepatectomy were eligible. Outcome criteria were safety parameters and survival rates. Data were analyzed using the random-effects model.

Results: In eight observational clinical studies, 450 patients with repeated hepatic resection were compared with 2669 single hepatic resections. Morbidity such as hepatic insufficiency (OR [95% CI] 1.46 [0.69; 3.08], $p = 0.32$) and biliary leakage and fistula (OR [95% CI] 1.22 [0.80; 1.85], $p = 0.35$) was comparable between the two groups. Mortality (OR [95% CI] 1.13 [0.46; 2.74], $p = 0.79$) and overall survival (HR [95% CI] 1.00 [0.63; 1.60], $p = 0.99$) were not significantly different between the two groups.

Discussion: Repeated hepatic resection for colorectal liver metastases is safe in selected patients. A prospective, multicenter high-quality trial or register study of repeated hepatic resection will be required to clarify patient-oriented outcomes such as overall survival and quality of life.

Received 29 November 2016; accepted 16 February 2017

Correspondence

Markus W. Büchler, Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Im Neuenheimer Feld 110, 69120 Heidelberg, Germany. E-mail: markus.buechler@med.uni-heidelberg.de

Introduction

Following resection of colorectal liver metastases (CRLM) the current 5-year median survival is 38%.¹ However, recurrent disease occurs in 25–40% of patients within 2–3 years after initial resection.² Isolated hepatic metastatic recurrence is relatively common and is associated with poor median (range) survival of 4 (2–7) years.^{1,3,4}

This review was presented at the annual conference of the German Society of Surgery on May 1, 2015 in Munich, Germany and at the annual meeting of the Surgical Research Section of the German Society of Surgery on October 8, 2015 in Würzburg, Germany.

*These authors contributed equally to this work.

In 1990 the first retrospective analysis of data from a total of nine patients indicated that repeated resection of recurrent liver metastases after initial potentially curative resection might have an impact on overall survival.⁵ Due to recent advances in peri-operative care, repeated hepatic resection (RHR) has become feasible as supported by multiple observational clinical studies (OCS). To date, no meta-analysis of the inter-individual differences between patients receiving single hepatic resection (SHR) and RHR has been published. The four existing systematic reviews that indicate safety of RHR of CRLM were based on inter-individual comparisons only.^{6–9} To predict overall survival rates, analysis of independent groups of patients treated with SHR and RHR are mandatory.

The objective of this systematic review and meta-analysis was to evaluate the perioperative risk of RHR of recurrent CRLM in terms of mortality and morbidity. Moreover, overall survival has to be estimated in two independent patient collectives before conclusions can be drawn on potential differences between these strategies.

Methods

This systematic review and meta-analysis was conducted according to the PRISMA guidelines.¹⁰ All stages of study selection, data extraction, and quality assessment were carried out independently by two reviewers (EW, ST). Any disagreements were resolved by discussion or consultation of a third reviewer (MD). A protocol was drawn up a priori to define the performance and modalities of the systematic review.

Literature search

Electronic searches of the databases Cochrane Library, MEDLINE and EMBASE were conducted. The search strategy consisted of a combination of medical subject heading (MeSH) terms and keywords addressing RHR as treatment for CRLM (Supplemental material: sTable 1). The last update search was performed on October 19, 2015.

Additionally, screening of the following trial registers was performed: WHO International Clinical Trials Registry Platform, EU Clinical Trials Register, Clinicaltrials.gov, Current Controlled Trials, and German Registry of Clinical Studies. Furthermore, reference lists of obtained studies and reviews were screened manually.

Trial selection

Randomized controlled trials (RCT) and OCS comparing RHR and SHR for CRLM in independent patient collectives were eligible if a minimum sample size for the RHR group was reported (15, 10 or 5 patients for second, third or fourth hepatectomy, respectively).

There were no restrictions on language, publication status, or date of publication. In the case of multiple publications of the same study, only the latest publication of best quality was included, unless the study outcomes were mutually exclusive or measured at different times of intervals. If clarification was required, authors were contacted.

Studies comparing outcomes of SHR and RHR in the same patients or for the treatment of hepatic pathologies other than CRLM were excluded. Publications other than comparative studies were also eliminated, as were studies reporting only the effectiveness of ablative techniques or the use of two-stage hepatectomy.

Outcomes

The outcomes were parameters for benefit (overall survival) and harms such as postoperative mortality within and up to 90 days, postoperative surgical complications, and non-surgical outcomes.

Data extraction

Data extraction was performed using a standardized data extraction sheet retrieving all relevant information from the included trials (available upon request).

Assessment of risk of bias

Quality assessment was performed using a modified checklist on the basis of the Downs and Black criteria¹¹ including the following parameters: reporting, external validity, internal validity, confounding. The maximal Downs and Black score is 31. Blinding was considered adequate if assessors were blinded, because blinding of surgeons or patients would not be feasible. Additional criteria focusing on the assessment of funding and conflict of interest were added. The modified checklist is available upon request.

Statistical analysis

Odds ratio (OR) and mean difference (MD), both with 95% confidence intervals (CI), were calculated as effect measures for dichotomous and continuous data, respectively. If a publication only gave medians or ranges, the methods described by Hozo *et al.* were applied to calculate means and standard deviations (SD) from the values reported.¹²

Overall survival was assessed by means of the hazard ratio (HR) extracted from Kaplan–Meier survival curves in studies according to the method introduced by Parmar *et al.*¹³ and using the Excel add-on of Tierney *et al.*¹⁴ Weighted overall OR were based on the Mantel-Haenszel method, weighted overall HR and weighted overall MD on the inverse variance method. All results were investigated for clinical and statistical heterogeneity. Clinical heterogeneity was defined as the existence of inhomogeneous study population, variability of interventions, and insufficient definition of outcome parameters. The remaining heterogeneity was explored according to a priori hypotheses, which included differences in prognostic baseline patient characteristics, trial quality (adequacy of allocation concealment, blinding, and surgical standardization), study sample size, and type of analysis. Statistical heterogeneity was explored by inspecting the forest plot and I^2 statistic. To account for clinical heterogeneity, overall estimates were calculated using the random-effects model. The meta-analysis results are presented in a descriptive manner.

Sensitivity analyses were performed for study quality and reported recurrence in the SHR group. Studies with and without reporting recurrence in the SHR group were analyzed separately.

The meta-analysis was performed using Review Manager Version 5.3, Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2014.

Results

Characteristics of included studies

The PRISMA flow chart is shown in Fig. 1. Eight eligible OCS were identified,^{15–22} including a total of 450 patients with RHR

Download English Version:

<https://daneshyari.com/en/article/5656475>

Download Persian Version:

<https://daneshyari.com/article/5656475>

[Daneshyari.com](https://daneshyari.com)