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Review

Quality of life after cytoreductive surgery and hyperthermic intra-peritoneal chemotherapy for peritoneal carcinomatosis: A systematic review and meta-analysis

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ABSTRACT

Objective: To review the effect of cytoreductive surgery (CRS) and hyperthermic intra-peritoneal chemotherapy (HIPEC) on health-related quality of life (HRQOL) in patients with peritoneal carcinomatosis.
Background: CRS and HIPEC is increasingly performed with curative intent for peritoneal carcinomatosis. Significant morbidity rates are reported in the context of limited life-expectancy, necessitating accurate post-operative HRQOL outcome data.
Methods: A systematic review of clinical studies published after January 2000 was performed using strict eligibility criteria. Key outcomes measures were post-operative HRQOL compared to pre-operative levels and reference populations. Quality appraisal and data tabulation were performed using pre-determined forms. Data were synthesised by narrative review and random-effects meta-analysis. Tau^2 and I^2 values and Funnel plots were analysed for consistency and bias.
Results: 15 studies (1583 patients) were included. HRQOL declines at the 3–4 month time-point before becoming similar or better compared to pre-operative levels at 1 year. The pooled-effects of combined post-operative functional assessment of cancer therapy and European organisation for research and treatment quality of life questionnaire scores were significantly improved from baseline on overall health status ($p = 0.001$) and emotional health ($p = 0.001$). Physical health ($p = 0.83$), social health ($p = 0.48$) and functional health ($p = 0.24$) remain similar. HRQOL after 1 year is less clear, but benefits may persist up to 5 years especially on overall and physical health domains. Evidence is conflicted and inconclusive on HRQOL compared to reference populations. Levels of consistency and bias were acceptable.
Conclusions: CRS and HIPEC for peritoneal carcinomatosis can confer small to medium benefits for HRQOL. These results should be interpreted with in caution due to the small studies and absence of more randomised controlled trials.

Contents

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Mini-abstract

Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) is increasingly performed with curative intent for patients with peritoneal carcinomatosis. Significant morbidity rates are reported in the context of limited life-expectancy. This article reviews the effect of CRS and HIPEC on health-related quality of life in patients with peritoneal carcinomatosis.

Introduction

Rationale

Peritoneal carcinomatosis is a clinical entity whereby tumour arising from the peritoneal surface or visceral organs disseminates extensively throughout the inside surface of the abdomen [1]. It is traditionally considered a terminal condition with most patients dying at 6 months after disease onset [1,2]. Furthermore, patients' health-related quality of life (HRQOL) is greatly diminished during this time due to symptoms, and emotional and social stress [3,4]. The advent of cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) has changed treatment perspective towards a curative approach for selected patients. In particular, peritoneal carcinomatosis of colorectal origin and pseudomyxoma peritonei are so responsive that CRS and HIPEC are now regarded as the treatment of choice for these conditions [5,6]. Peritoneal carcinomatosis is increasingly considered to be a locoregional manifestation of disease rather than an end-stage terminal event [7].

Even though CRS and HIPEC can give patients hope of cure, it is a major operation which is known to cause substantial morbidity. Post-operative outcomes vary greatly between institutions. Perioperative mortality and morbidity in high volume tertiary centres has been reported at 0.9–5.8% and 12–52% respectively [1]. However, when taking into account all institutions, mortality and morbidity reaches 12% and 66% respectively whilst 5-year survival rate is 15–84% [5]. Purely prolonging life may not be the best outcome for the patient [8].

HRQOL is an important measure of post-operative outcome after any surgical intervention. The importance of HRQOL assessment in CRS and HIPEC patients has been previously described [9]. Since the introduction of HRQOL assessment, more effective tools have been developed to facilitate more accurate HRQOL measurements [10]. Knowledge of HRQOL outcomes are critical in informing patient expectations and pre-operative decision making [11].

A recent narrative review reports that HRQOL after CRS and HIPEC is reported to decrease up to 6 months before returning to baseline at a year and sometimes even improving [12,13]. However, to our knowledge there has been no systematic review or meta-analysis on HRQOL after surgery. This is critical in outcome evaluation and allows both patient and clinician to assess whether the procedure will be worthwhile.

Objectives

We conducted a systematic review and meta-analysis of all original articles to investigate HRQOL after CRS and HIPEC in adults compared to respective patients' pre-operative status and reference populations using a time-dependent approach.

Methods

The structure of this systematic review followed previously recommended guidelines [14] and was written in accordance with the PRISMA checklist [15].

Definition and measurement of health-related quality of life

HRQOL in peritoneal carcinomatosis is previously described and encapsulates an individual's overall, physical, emotional, social and functional health [9,16,17]. Since it is not a tangible entity, a standardised method of measurement is required which is reliable, valid, responsive, sensitive, and covers all health domains [17].