Efficacy of total neoadjuvant therapy (TNT) in rectal cancer: A meta-analysis of randomized controlled trials

Yakup Ergun
Batman Training and Research Hospital, Department of Medical Oncology, Batman, Turkey

INTRODUCTION

Surgery is performed after neoadjuvant chemoradiotherapy (CRT) as standard in locally advanced rectal cancer. However, in recent years, it has been observed that oncological outcomes can be improved with the treatment modality called total neoadjuvant therapy (TNT) applied with different strategies. This meta-analysis investigated the efficacy of randomized controlled trials (RCTs) comparing standard CRT with TNT.

METHOD

PubMed and Cochrane Library databases were searched and studies published until 01 December 2021 were included. Standard arm; Patients who underwent surgery after neoadjuvant CRT, and the TNT arm was defined as patients who received chemotherapy for at least 3 months before or after CRT or short-term RT, and then surgery. Subgroup analyses were also performed if there were at least two studies that shared the same subgroup results. This Meta-analysis was performed using Review Manager, version 5.4 (RevMan), a proprietary software provided by the Cochrane Collaboration.

RESULTS

Six RCTs were included in this meta-analysis, and a total of 2307 patients were analyzed (three phase 3, three phase 2). There were 1195 patients in the TNT arm and 1112 patients in the CRT arm, with a median age of 62 years in both arms. In the joint analysis of six studies, the rate of pathological complete response (pCR) was found to be 25% in the TNT arm and 13% in the CRT arm (OR: 2.13, 95% CI 1.71-2.65, p<0.001) (I2 = 47%). There are three studies reporting 3-year disease-free survival (DFS) results, and in the joint analysis of these studies, 3-year DFS was 74.2% in the TNT arm and 69% in the CRT arm (OR: 1.31, 95% CI 1.07-1.60, p=0.01). (I 2 = 0%). OS analysis could not be performed because most studies did not share overall survival (OS) data.

CONCLUSIONS

In locally advanced rectal cancer, the rate of pCR with TNT increases 2 times compared to standard CRT. In addition, 3-year DFS results were found to be better with TNT. Longer follow-up results need to be awaited to see if the better pCR and DFS obtained with TNT are reflected in the OS results.

REFERENCES


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CONTACT INFORMATION

Corresponding author:
Yakup Ergun, MD
dr.yakupergun@gmail.com

Figure 1. Forest plot for pathological complete response