ROWAN-VIRTUA School of Osteopathic Medicine

A Systematic Review of Cetuximab with Radiotherapy and Chemotherapy With or Without Bevacizumab on Head and Neck Squamous Cell Carcinoma

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Background

Head and neck squamous cell carcinoma (HNSCC) is a rare cancer seen in adults that presents with poor prognosis. Treatment for HNSCC consists of surgery, chemotherapy, radiotherapy, immunotherapy, and targeted therapy. Management of late stage, unresectable HNSCC with unresectable cancers usually involves the addition of targeted therapies. Of the targeted therapies for HSNCC, the most researched regimen of care involves cetuximab, an inhibitor of the epidermal growth factor receptor (EGFR). A much less researched targeted therapy includes bevacizumab, a vascular endothelial growth factor-A (VEGF-A) inhibitor.

Significance

The purpose of this study is to compare survival rates between Cetuximab + Bevacizumab + Chemoradiotherapy (CBCRT) and Cetuximab + Chemoradiotherapy (CCRT) treatment groups in late stage HNSCC. The outcomes of interest included:

1. 2-year overall survival rate
2. 2-year progression-free survival rate

Discussion and Future Direction

Although the results were not statistically significant, bevacizumab improved PFS and OS. The lack of statistical significance can be attributed to the high heterogeneity and the limited study number on CBCRT. More studies are needed to explore the use of and the potential therapeutic benefit of VEGF inhibitors in late-stage squamous cell carcinoma

Citations

Methodology

A systematic review and meta-analysis was done following the 2020 PRISMA guidelines. 5 databases were used (Pubmed, Cochrane, Scopus, Web of Science, and Embase) to determine 2-year overall survival (OS) and progression-free survival (PFS) rates in patients with HNSCC undergoing CBCRT or CCRT. OS and PFS were analyzed using single proportions meta-analysis on R-studio. Subgroup analysis was performed to compare CCRT versus CBCRT for both OS and PFS. Random effects model was used due to the assumption of high heterogeneity.

Inclusion Criteria:

- Randomized control trials (RCTs)
- Cetuximab + Bevacizumab + chemo/radiotherapy on HNSCC
- Cetuximab + chemo/radiotherapy on HNSCC
- Late stage HNSCC

Exclusion criteria:

- Nonrandomized cohort studies
- Studies not using different targeted therapy regimens
- Non late stage HNSCC
- Individual case reports or case series of fewer than 5 patients
- Abstract-only studies and conference articles without full-text publications were excluded
- Studies that did not include outcomes of interest were also excluded

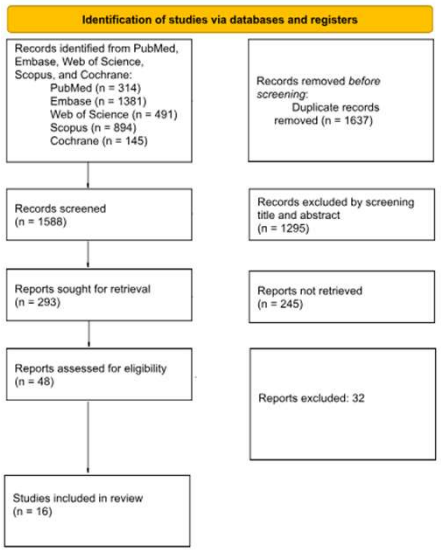

Fig. 1 PRISMA Flow diagram of how studies were selected

Results

This meta-analysis included 16 studies with 948 patients treated with either CCRT or CBCRT. Of the 16 studies, 14 reported outcomes for CCRT and 2 for CBCRT.

- The OS for the CCRT group was lower than the CBCRT group, but was not statistically significant (67%, CI [55%, 79%]; 83%, [69%, 97%]; P=0.08 respectively)
- The PFS for CCRT was lower than CBCRT, also not statistically significant (79%, CI [71%, 86%]; 88%, CI [75%, 100%]; P=0.22 respectively).

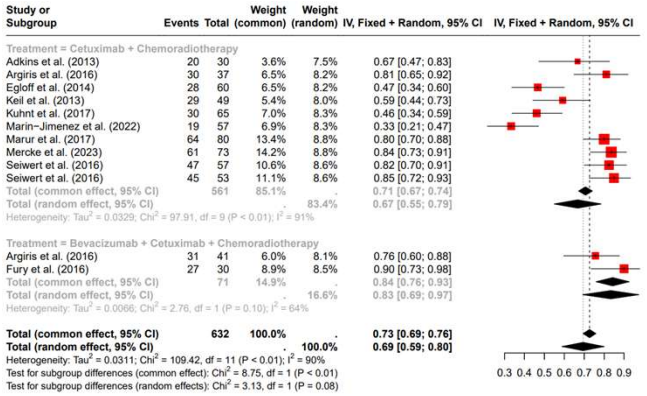

Fig. 2 2-Year Overall Survival Rate

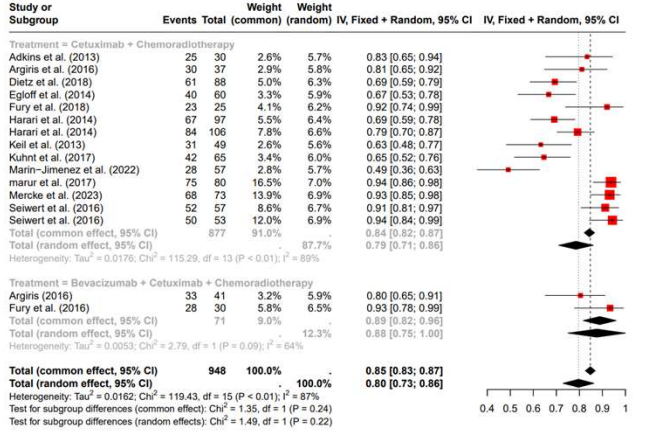

Fig. 3 2-Year Progression Free Survival Rate