IS IT SAFE TO USE BONE MORPHOGENETIC PROTEINS FOR RECONSTRUCTION OF MAXILLOFACIAL DEFECTS CAUSED BY ORAL SQUAMOUS CELL CARCINOMA?

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INTRODUCTION

The off-label use of BMPs has been attempted in some cases to solve other particularly significant reconstructive challenges in the craniomaxillofacial area. Notable cases involve the reconstruction secondary to traumatic injury or neoplasms. It is therefore important to deepen the study about the safety in the use of BMPs and the biological effects on malignant neoplasms before using this molecule for the reconstruction of maxillofacial bone defects in the vicinity of a resected tumor or in patients undergoing treatment for malignancy.

OBJECTIVE

The purpose of this study is to review the published literature which examines the role of BMPs in oral malignancy.

MATERIALS AND METHODS

A systematic review and analysis of the published literature in the English language was performed using the PubMed, ScienceDirect, Google search engine, MEDLINE, and SCIELO databases. Only studies that directly addressed BMPs and cancer were included. The terms ‘‘bone morphogenetic protein’’, ‘‘BMP’’, ‘‘rhBMP’’, ‘‘maxillofacial cancer’’, ‘‘oral malignancy’’, “oral squamous cell carcinoma’, “oral cancer’’, ‘‘tumorigenesis’’, and ‘‘metastasis’’ were used as search terms. Studies that analyzed the role of BMPs in OSCCA, cancer attributes, and whether BMPs was pro-malignancy or not were included. Only articles in English journals or published with English translations were included.

RESULTS

A total of 4,011 articles were reviewed. Of those, 492 made reference to both BMPs and cancer. The 492 studies were further analyzed and a total of 46 studies were found to directly examine the role of BMPs in cancer. Thirteen articles examined the role of BMPs in OSCCA. 2 studies were in vivo, 2 studies were literature reviews and 9 studies were in vitro. Nine studies (69,2%) concluded that BMPs enhanced OSCCA function (7 in vitro, 2 in vivo studies). Two studies (15,4%) found that BMPs inhibited OSCCA function (2 in vitro studies) and two studies (15,4%) concluded that more researches are needed to analyze the role between BMPs and the biology of OSCCA (2 review studies). [Figure 1]. No studies showed that BMPs have no role in carcinogenesis of OSCCA.

CONCLUSION

Depending on the BMPs ligand and cancer type, BMPs can either promote or inhibit tumorigenesis. According to the data collected by us, we do not recommend its use to reconstruct maxillofacial bone defects caused by resection of OSCCA. This review serves to further clarify the role of exogenous BMPs in OSCCA

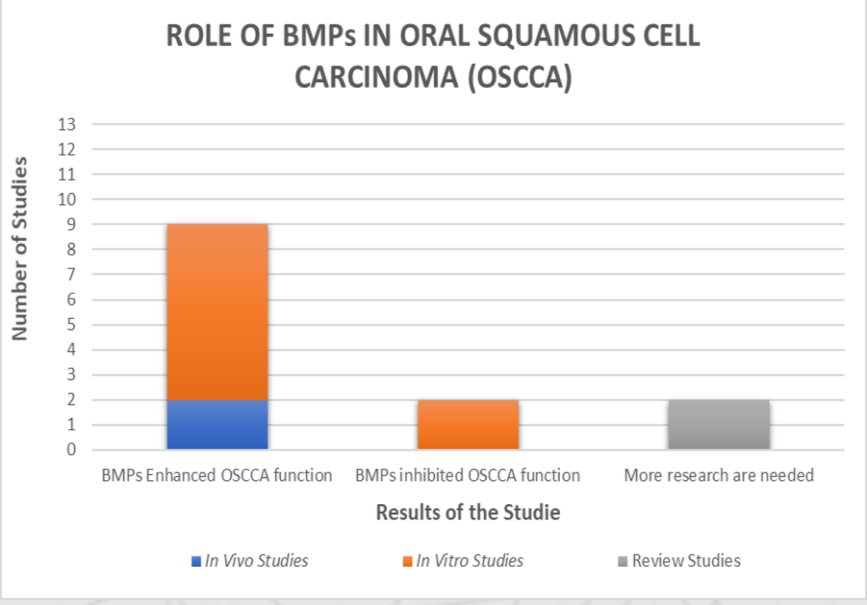

Fig. 1 Role of BMPs in oral squamous cell carcinoma (OSCCA).

THE AUTHORS DECLARE THAT THEY HAVE NO CONFLICTS OF INTEREST