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Assessment of Tumor Size Changes After Neoadjuvant Systemic Treatment for Esophageal Neuroendocrine Carcinoma (ENEC) Running title: Tumor size changes in esophageal neuroendocrine carcinoma

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Abstract

Objective: Although esophageal neuroendocrine carcinoma (ENEC) is a rare clinical entity, it follows an aggressive disease course with a typically poor prognosis. Management of ENEC may include surgery, radiation therapy (RT), and systemic agents. Neoadjuvant systemic therapy may be offered for management of ENEC. The rationale behind neoadjuvant systemic treatment may include reduction of the disease burden before administration of subsequent treatments, mainly surgery. The aim of our current study has been to assess tumor size changes following neoadjuvant systemic therapy for ENEC.

Materials and methods: In the designing of this study, we aimed at assessing tumor size changes following neoadjuvant systemic therapy for ENEC. To embark on this critical issue, patients with ENEC having available imaging data as part of initial workup have been studied. All included patients received upfront neoadjuvant systemic treatment. We have performed a comparative analysis for tumor sizes at diagnostic CT scans of the patients and following neoadjuvant systemic treatment. Tumor size changes after neoadjuvant systemic treatment have been documented for comparative assessment and analysis.

Results: We found a mean decrease of 20% in tumor sizes after neoadjuvant systemic treatment for patients with ENEC.

Conclusion: We found a mean decrease of 20% in tumor sizes after neoadjuvant systemic treatment for patients with ENEC. From a point of view, findings may have implications for widespread utilization of neoadjuvant therapeutic strategies for ENEC management, nevertheless, validation in further clinical studies may clearly be warranted.

Keywords: Esophageal Neuro Endocrine Carcinoma (ENEC); Radiation therapy (RT); Neoadjuvant systemic treatment; Sophisticated RT approaches; Automatic segmentation techniques

Abbreviations: ENEC: Esophageal Neuro Endorine Carcinoma; RT: Radiation Therapy; IGRT: Image Guided RT; IMRT: Intensity Modulated RT; ART: Adaptive RT

Introduction

Although esophageal neuro endorine carcinoma (ENEC) is a rare clinical entity, it follows an aggressive disease course with a typically poor prognosis [1-7]. Critically, both the disease itself and therapeutic strategies utilized for management of ENEC may lead to impairment in quality of life of the patients. Management of ENEC may include surgery, radiation therapy (RT), and systemic agents [2-7]. In terms of irradiation, several forms of RT might be used, and contemporary techniques including intensity modulation, stereotactic RT, and adaptive RT may lead to improved RT results. Using higher irradiation doses may lead to improved disease control results, nevertheless, toxicity profile of radiation delivery should also be considered to maintain patients' quality of life and avoid excessive toxicity. By the way, recent years have witnessed critical advances in technology which may have contributed to improved RT results. Automatic segmentation techniques, Image Guided RT (IGRT), molecular imaging methods, Intensity Modulated RT (IMRT), stereotactic RT, and adaptive RT (ART) have all been incorporated for improving the therapeutic efficacy [8-100]. In context of cancer management, optimal therapeutic results may ultimately be achieved through close collaboration among related disciplines. As a matter of fact, multidisciplinary tumor boards may contribute to collaboration among surgical oncologists, radiation oncologists, and medical oncologists by providing an excellent platform for discussing about patient, tumor, and treatment characteristics along with contemplated outcomes of suggested theraputic strategies. Neoadjuvant systemic therapy may be offered for management of ENEC [5-7]. The rationale behind neoadjuvant systemic treatment may include reduction of the disease burden before administration of subsequent treatments, mainly surgery. Neoadjuvant systemic treatment may also prevent widespread dissemination of disease. Nevertheless, there may also be controversies regarding neoadjuvant systemic treatments such as the risk of delayed local treatments. But, selected groups of patients with ENEC may benefit from neoadjuvant systemic treatment [2-7]. The aim of our current study has been to assess tumor size changes following neoadjuvant systemic therapy for ENEC.

Materials and methods

Our clinic has served as a tertiary cancer center for patients from Turkey and abroad for decades. Plenty of benign and malignant tumors have been irradiated here by use of modernized equipment and sophisticated RT approaches such as IGRT, IMRT, ART, stereotactic RT, automatic segmentation techniques, and molecular imaging methods. In the designing of this study, we aimed at assessing tumor size changes following neoadjuvant systemic therapy for ENEC. To embark on this critical issue, patients with ENEC having available imaging data as part of initial workup have been studied. All included patients received upfront neoadjuvant systemic treatment. We have performed a comparative analysis for tumor sizes at diagnostic CT scans of the patients and following neoadjuvant systemic treatment. Tumor size changes after neoadjuvant systemic treatment have been documented for comparative assessment and analysis.

Results

We have intended for investigating tumor size changes after neoadjuvant systemic therapy for ENEC in this study. All included patients were individually assessed by a multidisciplinary team of experts from surgical oncology, medical oncology, and radiation oncology before management. Patients with ENEC having available imaging data as part of initial workup have been included. Selected patients initially received upfront neoadjuvant systemic therapy. We executed a comparative analysis for tumor sizes at diagnostic CT scan of the patients and following neoadjuvant systemic treatment. Tumor size changes after neoadjuvant systemic treatment were documented to be used for comparative analysis. As the main endpoint of our study, we found a mean decrease of 20% in tumor sizes after neoadjuvant systemic treatment for patients with ENEC.

Discussion

Although esophageal neuroendorine carcinoma (ENEC) is a rare clinical entity, it follows an aggressive disease course with a typically poor prognosis [1-7]. Critically, both the disease itself and therapeutic strategies utilized for management of ENEC may lead to impairment in quality of life of the patients. Management of ENEC may include surgery, radiation therapy (RT), and systemic agents [2-7]. In terms of irradiation, several forms of RT might be used, and contemporary techniques including intensity modulation, stereotactic RT, and adaptive RT may lead to improved RT results. Using higher irradiation doses may lead to improved disease control results, nevertheless, toxicity profile of radiation delivery should also be considered to maintain patients' quality of life and avoid excessive toxicity. By the way, recent years have witnessed critical advances in technology which may have contributed to improved RT results. Automatic segmentation techniques, Image Guided RT (IGRT), molecular imaging methods, Intensity Modulated RT (IMRT), stereotactic RT, and adaptive RT (ART) have all been incorporated for improving the therapeutic efficacy [8-100]. In context of cancer management, optimal therapeutic results may ultimately be achieved through close collaboration among related disciplines. As a matter of fact, multidisciplinary tumor boards may contribute to collaboration among surgical oncologists, radiation oncologists, and medical oncologists by providing an excellent platform for discussing about patient, tumor, and treatment characteristics along with contemplated outcomes of suggested theraputic strategies. Neoadjuvant systemic therapy may be offered for management of ENEC [5-7]. The rationale behind neoadjuvant systemic treatment may include reduction of the disease burden before administration of subsequent treatments, mainly surgery. Neoadjuvant systemic treatment may also prevent widespread dissemination of disease. Nevertheless, there may also be controversies regarding neoadjuvant systemic treatments such as the risk of delayed local treatments. But, selected groups of patients with ENEC may benefit from neoadjuvant systemic treatment [2-7]. The aim of our current study has been to assess tumor size changes following neoadjuvant systemic therapy for ENEC.

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