Age, Gender, and Race as Factors Associated with Oropharyngeal Cancer

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Introduction

Oropharyngeal cancer develops from oropharyngeal squamous cell carcinoma (OPSCC) in the oral cavity and pharynx merge (CDC, 2020). OPSCC can progress into tumors and put different organs at risk, this can affect swallowing functions and lead to weight loss. In addition to smoking tobacco and alcohol consumption, human papillomavirus (HPV) has been recognized as a leading risk factor for oropharyngeal cancer. Neck mass and sore throat are the most common initial symptoms of patients with OPSCC (Ottosson et al., 2014). HPV-positive patients usually have initial symptoms related to neck, whereas HPV-negative patients usually develop initial symptoms related to the primary tumor site, including sore throat, dysphagia, and/or odynophagia. (Wesley et al., 2014)

Fig. 1. Healthy mouth vs. Mouth with OPC symptoms.

Fig. 2. Initial symptoms of OPSCC in the back of the throat.

Fig. 3. The incidence of OPC is the highest in White Americans, and the lowest in American Indians/Alaska Natives.

Fig. 4. The incidence of OPC is steadily increasing over the years based on the data obtained from 2013-2017.

Fig. 5. The OPC incidence increases around the ages 60-69.

Methodology

Due to COVID-19 restrictions preventing in-laboratory experiences, a background literature review was conducted to develop the objectives and introduction materials. Data mining was performed with publicly available cancer values from the U.S. Cancer Statistics Data Visualizations Tool provided by the Centers for Disease Control and Prevention (CDC) and the National Cancer Institute (NCI). Statistical analysis was obtained from the independent unit t-test that was constructed on excel by using values from the data visualization tool.

The t-test was used to determine if there is a significant difference between different age groups with new cases of OPC and death counts of OPC.

Objectives

The aim of this study is to investigate age, gender, and race as factors associated with OPC by using US patients’ demographics and trends obtained from the CDC to investigate the following:

- Has the incidence of oropharyngeal squamous cell carcinoma (OPSCC) been steadily increasing over the years?
- Which race and gender has the highest OPC incidence?
- Is there a significant difference between the age groups (0-39 & 40-79) new cases?
- Is there a significant difference between the age groups (0-39 & 40-79) death count?
- Is there a significant difference between different age groups (20-49 & 50-79) death count?

Results

The incidence of OPC is steadily increasing over the years (Fig. 4). This trend has been attributed to the increased incidence of HPV-positive OPSCC, which is most common in middle-aged White males among the ages 45-65 (Fig. 3) (Fig. 5). There is a significant difference in new cases between the two age groups (0-39) and (40-79) (Table 1). There’s also a significant difference in death counts between the two age groups (20-49) and (50-79) (Table 2), the new cases of OPC and death counts are higher in older patients, this is suspected to be caused by a history of heavy tobacco smoking and alcohol consumption in older patients. Understanding how age, race, and gender play a role in OPC can help scientists and researchers treat OPC faster by targeting those factors with high incidence of OPC and death counts.

References


Conclusion

The incidence of oropharyngeal squamous cell carcinoma (OPSCC) has been steadily increasing over the years (Fig. 4). This trend has been attributed to the increased incidence of HPV-positive OPSCC, which is most common in middle-aged White males among the ages 45-65 (Fig. 3) (Fig. 5). There is a significant difference in new cases between the two age groups (0-39) and (40-79) (Table 1). There’s also a significant difference in death counts between the two age groups (20-49) and (50-79) (Table 2), the new cases of OPC and death counts are higher in older patients, this is suspected to be caused by a history of heavy tobacco smoking and alcohol consumption in older patients. Understanding how age, race, and gender play a role in OPC can help scientists and researchers treat OPC faster by targeting those factors with high incidence of OPC and death counts.

Oropharyngeal cancer can be treated with surgery, radiotherapy, or chemotherapy. These treatment methods aim to minimize functional and cosmetic damage. If a patient with Oropharyngeal cancer isn’t cured from either of these treatment methods, then palliative therapy is given to treat the patient’s pain and discomfort (CDC, 2020).