REVIEW ON THROAT CANCER

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ABSTRACT

Cancers of the mouth and throat encompass a range of malignancies affecting the oral cavity, pharynx, and larynx. This abstract review the risk factors, symptoms, and treatment options associated with these cancers. Key risk factors include tobacco use, alcohol consumption, and human papillomavirus (HPV) infection. Symptoms often involve persistent sores, pain, and difficulty swallowing. Treatment options are tailored to the cancer's stage and location and may include surgery, radiation therapy, and chemotherapy. Advances in targeted therapies and immunotherapy offer new avenues for treatment. This review aims to provide a comprehensive overview of the current understanding of mouth and throat cancers and their management.

Throat cancer refers to cancerous tumor that develops in throat, voice box or tonsils, it may metastasise to other tissues or organs of the body. Throat cancer is the 6 th most common type of cancer in the world. The purpose of the present study was to investigate the prevalence of the disease in selected cities. A detailed survey was conducted to analyze whether the disease is associated with age factor, Gender and other risk factors. The analysis revealed that males are more affected than females and it is more prevalent in adults of age group above 40 years. Individuals having multiple habits are at greater risk of developing throat cancer. Hence it can be concluded that throat cancer is common in elderly individuals who smoke and drink alcohol. Avoidause and smoking will be a milestone to reduce the incidence of throat cancers and associated mortality.

Medical applications in Machine Learning (ML) algorithms is well-being state on analyzing the different attributes that have a high impact on getting illness. Cancer is one amoungof the human disease where researchers are still struggling for the complete cureness and it is also unpredictable. Cancer is a heterogeneous disease and its treatment varies from one type to another and can inculcate different phases. Throat cancer is a tumor that spreads throughout the voice box (larynx), tonsils, or throat (pharynx). In the initial stage, it is actively recommended to diagnose throat cancer and get proper medication. Deep Learning (DL) image processing techniques and ML techniques are used to effectively predict the throat cancer specifically for the supervised learning classification algorithms. This paper reviewed theML and DLbased researchactivities undertaken to classify cancer of the throat cancer.

Key words- *introduction , treatment, diagnosis, drug(bleomysin sulfate).*

INTRODUCTION

Throat cancer, also known as laryngeal cancer, is a malignant growth that develops in the larynx, or voice box. It can significantly impact a person's quality of life, particularly affecting their ability to speak and swallow. Throat cancer, also called pharyngeal or laryngeal cancer, encompasses a range of malignant tumors that develop in the throat's tissues, including the pharynx, larynx, and tonsils. These cancers are typically classified based

on location, with the most common forms being nasopharyngeal, oropharyngeal, and hypopharyngeal cancers. The primary risk factors for throat cancer include tobacco use, excessive alcohol consumption, and infection with human papillomavirus (HPV), which has been increasingly linked to oropharyngeal cancer. Other factors such as poor nutrition, exposure to certain chemicals, and gastroesophageal reflux disease (GERD) may also contribute to the development of the disease.

Throat cancer is often diagnosed at an advanced stage, making early detection and treatment crucial for improving patient outcomes. Symptoms such as a persistent sore throat, difficulty swallowing, hoarseness, or unexplained weight loss may be indicators, though these can often be mistaken for other less serious conditions. Treatment typically involves a combination of surgery, radiation therapy, and chemotherapy, depending on the cancer's stage and location. Despite advances in treatment, throat cancer remains a significant health concern due to its potential impact on speech, swallowing, and overall quality of life. Ongoing research into targeted therapies and the role of HPV in throat cancer progression aims to improve survival rates and reduce the long-term consequences of treatment.

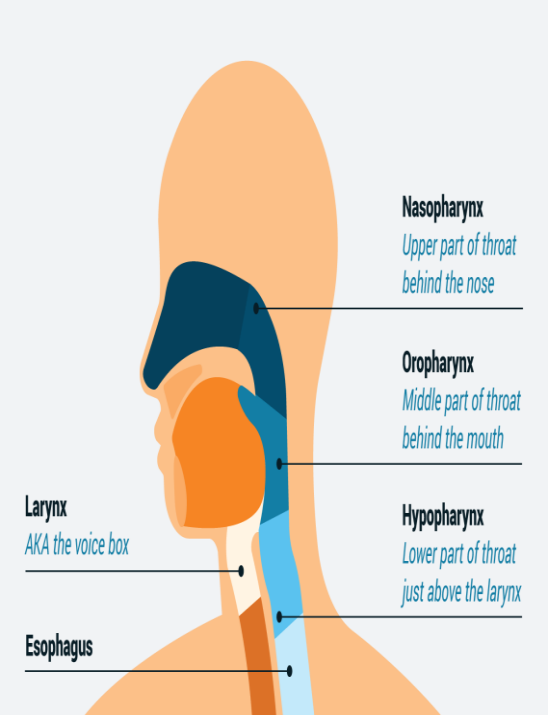

Figure.no 1-types of throat cancer

Types of throat cancer

- **Glottic**: Occurs in the vocal cords.
- **Supraglottic**: Affects the upper part of the larynx,
- including the epiglottis.
- **Subglottic:** Develops in the lower part of the larynx, below the vocal cords.

Cause and Risk Factors

- **Smoking**:

The most significant risk factor for throat cancer.

- **alcohol consumption**:

Increases the risk, especially when combined with smoking.

- **Human papillomavirus (HPV)**

Certain types of HPV infection can contribute to throat cancer.

- **Exposure to certain chemicals:**

Asbestos, formaldehyde, and some industrial chemicals can increase the risk.

- **Genetics:**

A family history of throat cancer or other cancers may increase susceptibility.

Symptoms

- Hoarseness or changes in voice
- Difficulty swallowing
- Persistent sore throat
- Ear pain
- Lump in the neck
- Unexplained weight loss

Fig.1, oral symptoms of throat cancer

Diagnosis

- **Physical examination:**

A doctor will examine the throat and neck for any abnormalities.

- **Imaging tests:**

CT scans, MRI scans, and PET scans can help visualize the tumor and assess its extent.

- **Biopsy**:

A tissue sample is taken and examined under a microscope to confirm the diagnosis.

Treatment

Treatment for throat cancer depends on the type,stage, and overall health of the patient. Common

options include:

- **Surgery:**

May involve removing the tumor, part of the larynx, or the entire larynx.

- **Radiation therapy:**

Uses high-energy rays to kill cancer cells.

- **Chemotherapy**:

Uses drugs to kill cancer cells.combination of surgery, radiation, and Chemotherapy Your treatment options are based on many factors, such as the location and stage of your throat cancer, the type of cells involved, whether the cells show signs of HPV infection, your overall health, and your personal preferences. Discuss the benefits andrisks of each of your options with your doctor. Together you can determine what treatments will be most appropriate for you.

Radiation therapy

Radiation therapy uses high-energy beams from sources such as X-rays and protons to deliver radiation to the cancer cells, causing them to die.Radiation therapy can come from a large machine outside your body (external beam radiation), or

radiation therapy can come from small radioactive seeds and wires that can be placed inside your body, near your cancer (brachytherapy).

For small throat cancers or throat cancers that haven't spread to the lymph nodes, radiation therapy may be the only treatment necessary. For more-advanced throat cancers, radiation therapy may be combined with chemotherapy or surgery. In very advanced throat cancers, radiation therapy may be used to reduce signs and symptoms and make you more comfortable.

Surgery

The types of surgical procedures you may consider to treat your throat cancer depend on the location and stage of your cancer. Options may include:

- **Surgery for small throat cancers or throat cancers that haven't spread to the lymph nodes.**

Throat cancer that is confined to the surface of the throat or the vocal cords may be treated surgically using endoscopy. Your doctor may insert a hollow endoscope into your throat or voice box and then pass special surgical tools or a laser through the scope. Using these tools, your doctor can scrape off, cut out or, in the case of the laser, vaporize very superficial cancers.

- **Surgery to remove all or part of the voice box (laryngectomy).**

For smaller tumors, your doctor may remove the part of your voice box that is affected by cancer, leaving as much of the voice box as possible. Your doctor may be able to preserve your ability to speak and breathe normally. For larger, more-extensive tumors, it may be necessary to remove your entire voice box. Your windpipe is then attached to a hole (stoma) in your throat to allow you to breathe (tracheotomy). If your entire larynx is removed, you have several options for restoring your speech. You can work with a speech pathologist to learn to speak without your voice box.

- **Surgery to remove part of the throat (pharyngectomy)**.

Smaller throat cancers may require removing only small parts of your throat during surgery. Parts that are removed may be reconstructed in order to allow you to swallow food normally. Surgery to remove more of your throat usually includes removal of your voice box as well. Your doctor may be able to reconstruct your throat to allow you to swallow food.

- **Surgery to remove cancerous lymph nodes (neck dissection).**

If throat cancer has spread deep within your neck, your doctor may recommend surgery to remove some or all of the lymph nodes to see if they contain cancer cells.

METHODOLOGY

A cross sectional study was conducted among pa- tients from the Department of medical Oncology and

Radiotherapy in a tertiary care Hospital of Chennai.

We included adult patients with oral and throat ma- lignancies confirmed by histopathological investiga- tions and on treatment for at least 1 month; radio- therapy or surgery or chemotherapy or combina- tions of three. Sample size was calculated using formula for single proportion assuming Za= 1.96 (for Cl of

95%), with mean(μ) and Standard Deviation(σ) of 29 and 23 respectively and 6 as the Margin of Er- ror(E).5 Sample size, n = (za2 σ2)/E 2 = 89.74 ≈ 90 The total sample size was approximated to 90.

Data was collected from the patients attending the outpatient clinic of radiotherapy and oncology department on the review day (Tuesday in oncology department and Friday in radiotherapy department). The patients meeting the inclusion criteria of the study on the mentioned days were enrolled consecu- tively till the required sample size was reached.

The questionnaire Section A containing sociodemo graphic details, current illness and primary caretaker details, the assessment of daily activities through Katz index of independence. 6 The activities being as sessed were; bathing, toileting, transferring, conti- nence, dressing, feeding. If the patient could perform

it without supervision, it was scored 1 else 0; if the total score was 6- independent, 3 to 5 - partially dependent, less than 2- completely dependent. 7 Section

B contained quality of life assessment using University of Washington - Quality of life questionnaire version 4(UW-QOL).8 It consists of 12 domains pain, appearance, activity, recreation, swallowing, chewing, taste, speech, saliva, mood, anxiety. The domains were scored between 0 and 100 (0 being the worst and 100 the best) based on patients experience over last 7 days. It also assesses the issues which were significantly important to the patients (3 most important issues as felt by the patients) over last 7days. There are three global questions; first address- es the quality of life of the patient compared to one

month before diagnosis, and the other two assesses the health related and overall quality of life patients over seven days. They are scored between 0 and 100 (0 being worst and 100 being best). The questionnaire was translated into Tamil, the local vernacular language by language experts and was back- translated to English to check for any discrepancy. The physical component of the UW QOL included 6 domains - chewing, swallowing, speech, taste, saliva and appearance while the social emotional component were anxiety, mood, pain, activity, recreation and shoulder function. Statistical analysis: Data collected in the study were entered into Microsoft Excel spreadsheet, and a master table was prepared. The data were analyzed using IBM Statistical Package for the Social Sciences 16 software. Descriptive statistics are presented as pro- portion and means while chi square, t test, Mann Whitney U test, Kruskal-Wallis test, person coefficient test were used to test the association.

Ethical Consideration: The patients were briefed about the study as well as an information sheet and consent form were provided. Those who consented to participate were only enrolled into the study. Study participants were also informed that participation was voluntary and they had the freedom to withdraw at any point from the study and could

choose not to answer any questions if found inappropriate. The study protocol was approved by the institutional ethics commitee of government stanley medical college prior to data collection.

Diagnosis of throat cancer

Tests to diagnose pharyngeal or laryngeal cancer may include:

Physical examination

Your doctor will examine your mouth, throat and neck and may insert a gloved finger into your mouth to examine areas that are difficult to see.

Blood tests

Samples may be taken to check your general health.

Biopsy

The doctor will remove a small sample of tissue or cells for examination under a microscope to see if cancer cells are present.

Endoscopy of the larynx

A thin tube with a light on its end (endoscope) will be inserted through the nose to look for abnormalities in the throat.

Ultrasound

A small device called a transducer is used to send out soundwaves that echo when they hit something dense such as an organ or tumour.

X-rays

You may have a chest x-ray to check your overall health or to see if cancer has spread to the lungs.

CT scan

A CT (computerised tomography) scan uses x-ray beams to create detailed cross-sectional images of inside your body.

MRI

An MRI (magnetic resonance imaging) scan uses magnet and radio waves to create detailed images of the inside of your body.

PET scan

A PET (positron emission tomography) scan combined with a CT scan, is often recommended. Radioactive material is injected into the body to help show cancer cells.

After a diagnosis of throat cancer

After finding out you have throat cancer, you may experience a range of emotions such as disbelief, confusion and sadness and feelings of loss of control. These reactions are normal and you may find it helpful to talk to family and friends about how you feel.

Talk to your doctor about treatments that are available to you, potential side effects and how soon you should start treatment. Take as much time as you can before making a decision.

Screening for throat cancer There is currently no national screening program for throat cancers available in Australia.

Preventing throat cancer

Around 60% of pharyngeal and laryngeal cancers in Australia are caused by smoking; around 30% are caused by excess alcohol consumption. So quitting smoking and moderating alcohol consumption will significantly reduce your risk of developing throat cancer.

Prognosis for throat cancer

Your doctor will not be able to predict the exact course of the disease, as it will depend on individual circumstances such as the

type of throat cancer you have and how far it has spread, your age, medical history and overall health.

Drugs profile

Bleomycin Sulfate

Cetuximab

Docetaxel

Erbitux (Cetuximab)

Hydrea (Hydroxyurea)

Hydroxyurea

Bleomycin Sulfate

listen (blee-oh-MY-sin SUL-fayt)

Bleomycin sulfate is an antibiotic that is used as a chemotherapy drug. It stops or slows the growth of cancer cells and other rapidly growing cells by damaging their DNA.

FDA Approved

Yes

FDA label information for this drug is available at DailyMed.

Use in Cancer

Bleomycin sulfate is approved to be used alone or with other drugs as palliative treatment of:

Hodgkin lymphoma.

Non-Hodgkin lymphoma (NHL).

Squamous cell carcinoma of the penis.

Squamous cell carcinoma of the cervix.

Squamous cell carcinoma of the head and neck (SCCHN).

Squamous cell carcinoma of the vulva.

Testicular cancer.

Bleomycin sulfate is also approved to treat **malignant pleural effusion** and keep it from recurring (coming back).

Bleomycin sulfate is also being studied in the treatment of other types of cancer.

More About Bleomycin Sulfate

Definition from the NCI Drug Dictionary - Detailed scientific definition and other names for this drug.

MedlinePlus Information on Bleomycin Sulfate - A lay language summary of important information about this drug that may include the following:

warnings about this drug,

what this drug is used for and how it is used,

what you should tell your doctor before using this drug,

what you should know about this drug before using it,

other drugs that may interact with this drug, and

possible side effects.

Drugs are often studied to find out if they can help treat or prevent conditions other than the ones they are approved for. This patient information sheet applies only to approved uses of the drug. However, much of the information may also apply to unapproved uses that are being studied.

Clinical Trials Accepting Patients

Find Clinical Trials for Bleomycin Sulfate - Check for trials from NCI's list of cancer clinical trials now accepting patients.

Conclusion

The drug information on this page is meant to be educational. It is not a substitute for medical advice. The information may not cover all possible uses, actions, interactions, or side effects of this drug, or precautions to be taken while using it. Please see your health care professional for more information about your specific medical condition and the use of this drug.

The study reflects on the current quality of life led by patients being treated for oral and throat cancers as being lesser than satisfactory, hence there is a strong need for the development of patient counselling serces and palliative care centres to help cancer patients cope with their daily living with confidence and dignity. These care centres along with pain management need to focus on making the individual ambulatory and vocational rehabilitation as this show a positive association with social component of QOL.

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