PREVALENCE AND AETIOLOGY OF NECK MASSES AMONG PATIENTS RECEIVING SURGICAL SERVICES AT MUHIMBILI NATIONAL HOSPITAL

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By

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CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled; ***"Prevalence and aetiology of neck masses among patients receiving surgical services at Muhimbili National Hospital;"*** in fulfillment of the requirements for the degree of Master of Medicine (Otorhinolaryngology) of the Muhimbili University of Health and Allied Sciences.

……..

Dr. Henry Swai

(Supervisor)

Date……

DECLARATION AND COPYRIGHT

I, **Dr. Mary Mathias** declare that to the best of my knowledge this **dissertation** is my original work, and has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature…… Date……

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DEDICATION

To my lovely husband Dr.Joachim Kilemile and my lovely daughters Angel J. Kilemile and Faith J. Kilemile.

ABSTRACT

Background

Neck masses are found in all age groups from many causes, ranging from congenital to acquired pathology. They can become a diagnostic challenge due to some of conditions that have this signal as the main manifestation. The prevalence of the neck masses at M.N.H is not yet known despite attending several patients presenting with neck masses. We also have late referral and management of patients with neck masses, and this can be due to lack of knowledge on neck masses.

Objective

The study aimed at determining the prevalence and aetiology of neck masses among patients receiving surgical services at Muhimbili National Hospital in Tanzania.

Methods

Descriptive hospital based cross sectional study was done from July to December 2016 involving the patients who were admitted in Otorhinolaryngology, Oral Maxillofacilal Surgery, General Surgery and Pediatric surgery wards. The participants who met the inclusion criteria were interviewed and thorough clinical examination was done. For the study participants with neck masses FNAC of the neck masses was done or open biopsy for ulcerated masses. Primary site of malignant neck masses was determined through various methods including indirect laryngoscopy, direct laryngoscopy and OGD then results were filled in questionnaires. CHI square test was used to test for significance. Statistical Package of Social Sciences (SPSS 20) computer software was used to analyze the data and a P-value of less than 0.05 was considered as statistically significant.

Results

The overall prevalence of neck masses was found to be 14.1% and proportion of neck masses was found to increase as the age increased. The prevalence of neck masses did not differ significantly between males and females. Anterior triangle was the most anatomical site in the neck with neck masses (53.8%). Most of the neck masses (65.7%) were malignant and the age group most involved was >60 years (P-value 0.000). SCC

was the leading malignant subtype among the malignant neck masses (54.1%). It was also found that 67.21% of the malignant neck masses were the metastatic nodes from primary cancers in the upper aerodigestive tract.

Conclusion

This study shows that neck masses are prevalent at MNH and proportion of neck masses increase as the age increase. The most anatomical site involved with the neck masses was anterior triangle. Most of the neck masses were malignant in which majority of them were metastatic nodes from upper aerodigestive tract.

Any neck mass especially in adults need thorough evaluation including upper aerodigestive examination to rule out possibility of malignancy.

Key words; neck masses, prevalence

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LIST OF ABBREVIATIONS

CT- Computed Tomography

CUP- Cancer of Unknown Primary

ENT- Ear, Nose and Throat

FNAC- Fine Needle Aspiration Cytology

MD- Doctor of Medicine

MNH- Muhimbili National Hospital

MUHAS- Muhimbili University of Health and Allied Sciences

OMFS- Oral Maxillofacial Surgery

OGD-Oesophagogastroduodenoscopy

ORL- Otorhinolaryngology

PET- Positron Emission Tomography

SCC- Squamous Cell Carcinoma

SPSS- Statistical Package of Social Science

MRI- Magnetic Resonance Imaging

UPS- Unknown Primary Site

DEFINITION OF KEY TERMS

Anorexia- Loss of appetite and inability to eat.

Cervical lymphadenopathy-Enlargement of lymph nodes in the neck due to various causes.

Chemodectomas- benign tumors that grow from the chemoreceptor tissues of the body.

Dysphagia- Difficulty in swallowing.

Fiber optic nasopharyngolaryngoscopy- examination of the nasopharynx, oralpharynx, hypopharynx and larynx by using a flexible scope which is passed through the nose.

Globus sensation- Sensation of lump or foreign body in the throat.

Haemoptysis- Coughing of blood originating from respiratory tract below the level of larynx.

Indirect laryngoscopy- examination of hypopharynx and larynx in which a small mirror is held at the back of patient's mouth then the source of light is directed to the mirror so as to view the hypopharynx and larynx through the mirror.

Malaise- general feeling of being ill

Neck mass- is any abnormal enlargement, swelling, or growth from the level of the base of skull to the clavicles

Otorhinolaryngologist- Medical specialist in ear, nose and throat disorders

Odynophagia- painful swallowing

Orchitis- an inflammation of one or both testicles usually caused by a bacterial infection or by the mumps virus.

Pyrexia- Abnormal elevation of body temperature

Scarification-is modification involving scratching, etching, burning / branding, or superficially cutting designs, pictures, or words into the skin as a permanent body modification.

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CHAPTER ONE

1. 1 BACKGROUND

Neck masses are findings that can present in all age groups from many causes, ranging from congenital to acquired pathology. They can become a diagnostic challenge due to various conditions that have this signal as the main manifestation. A detailed history and physical examination are essential to guide the investigation, namely: patient age, location in the neck, time course of the disease and the characteristics of the mass on palpation. Regarding etiology, neck masses can be classified into three main groups: inflammatory or infectious, congenital and neoplastic (1,2).

In children neck masses complaints constitute a major indication for surgical consultation in many pediatric surgical centers. The occurrence of neck masses during childhood creates anxiety to both parents and family physicians because of fear of probable underlying malignancy and frequently associated cosmetic problem. The majority of neck masses in children are benign lesions but special concern should be given for the possibility of a malignancy (3).

One of the most important considerations in an adult presenting with a lump in the neck is that the mass may represent a metastatic deposit from a primary cancer, often but not always in the upper respiratory or alimentary tract. This is particularly so for middle aged or elderly patients, especially those who have smoked. In these groups of patients it is important that the primary tumor is found quickly so that correct management of the disease can be instituted (4).

Evaluation of the neck masses must be approached in a thorough and disciplined manner since the mass may be the only manifestation of a serious and potentially malignant pathology, especially in the adult population (5)**.**

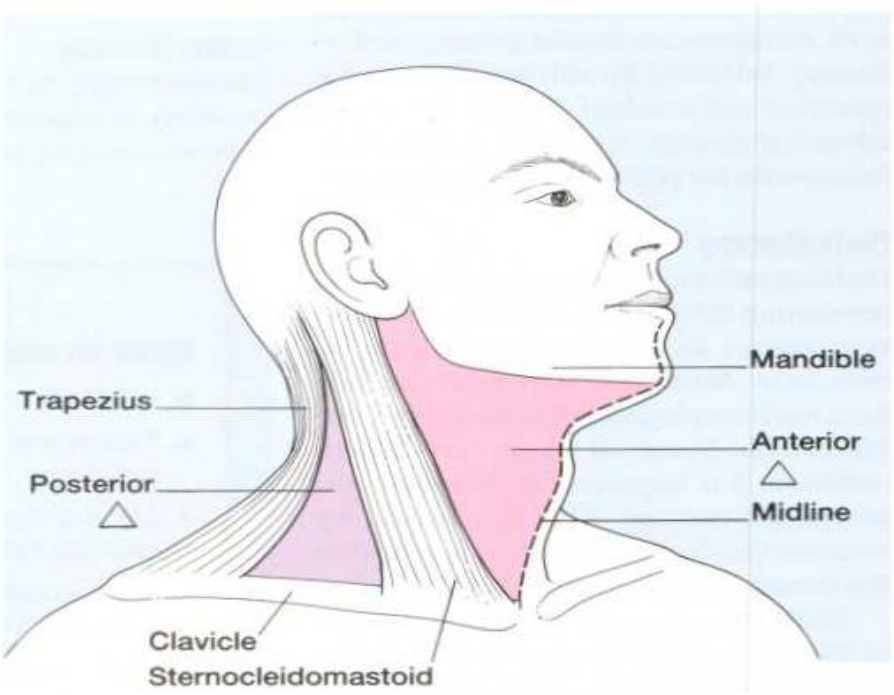
Neck node metastases from an unknown primary site are part of the “Cancer of Unknown Primary” origin, where the primary tumor may remain unknown for a

patient's lifetime despite thorough diagnostic work-up. Over 90% of neck metastases comprise squamous cell carcinoma (SCC) whereas other malignancies are less common. Node metastases can be found in every neck level with metastases from unknown primary site. In general, nodes in levels I–III are attributed to a presumable primary SCC located in the mucosa of the upper aerodigestive tract whereas nodes in levels IV and Vb more often arise from proximal esophageal and thyroid carcinomas, but can also originate from distant organs in the body. Lymph nodes with adenocarcinoma are frequently accompanied by multiple metastatic sites, such as lung, liver, and bones as part of the CUP syndrome (6)**.**

Surgical anatomy of the neck

The neck is bounded by inferior border of mandible, the tip of the mastoid process, and the external occipital protuberance. The lateral contours of the neck are defined by the palpable sternocleidomastoid muscles which divide the neck into anterior and posterior triangles. Palpable medial structures are the hyoid bone, thyroid cartilage, cricoid cartilage and when enlarged, the thyroid gland. The parotid glands are located in the preauricular area on each side in the lateral neck and its tail extends below the angle of the mandible, inferior to the ear lobe. The submandibular glands are located within the submandibular triangle. Lymph nodes are located throughout the head and neck region and are the most common sites of neck masses and may suggest the source of the primary lesion due to a predictive lymphatic flow pattern (2,7).

Figure 1: Anterior and posterior triangles of the neck.(An illustrated color text of Ear, Nose and Throat)



Cervical lymph nodes

The location of cervical lymph nodes in the neck can be divided into six levels. The level of the lymph nodes can be predictive as to the source of the problem. Level I include submandibular and submental nodes. Can harbor metastasis from cancers arising from floor of mouth, tongue, oral cavity, anterior nasal cavity and submandibular gland. Levels II, III and IV encompass lymph nodes along the internal jugular vein, deep to the sternocleidomastoid muscle in the upper, middle and lower thirds of the neck respectively. Harbor metastasis from cancers of oral cavity, nasal cavity, nasopharynx, oralpharynx, hypopharynx, larynx parotid gland and cervical oesophagus. Level V contains the nodes in the posterior triangle. Habours metastasis from cancers arising from nasopharynx and oralpharynx. Level VI lies between the carotid sheaths in the anterior triangle and contains the prelaryngeal and pretracheal nodes. Habours

metastases from cancers arising from thyroid gland, glottic and subglottic larynx, apex of piriform sinus and cervical oesophagus (8).

Diagnosis of neck masses

A careful history can provide important clues to the diagnosis of a neck mass including age, duration and location of the neck masses. In children and young adults, neck masses are more inflammatory than congenital and rarely neoplastic. However, the first consideration in the late adult should be considered neoplastic. Inflammatory disorders are usually acute in onset, and resolve within 2–6 weeks. Congenital masses are often but not always present from birth as small, asymptomatic masses, which enlarge rapidly after mild upper respiratory tract infection. Metastatic carcinoma nodes tends to have a short history of progressive enlargement (2,3,7)**.**

Various advanced imaging modalities such as Ultrasound, Computed tomography (CT) and magnetic resonance imaging (MRI) are effective for non invasive evaluation of a neck mass and its relationship to adjacent soft tissues and bony structures. However, these diagnostic imaging are expensive and commonly not available in many centers in resource-limited settings (3)**.**

Fine needle aspiration cytology (FNAC) with or without image guidance has been established as prerequisite investigation in the assessment of a patient presenting with a neck mass, including those presenting with a mass in the thyroid or major salivary glands. It is a safe procedure, requiring minimal equipment. However, to achieve good results, adequately trained cytopathologists with the prerequisite skills, experience, and regular workload are essential (9).

Differential diagnosis of neck masses

1.Midline neck masses in pediatric: thyroglossal duct cysts, dermoid cysts and thyroid masses(10).

2. Lateral neck masses in pediatric: Inflammatory conditions, Mumps, Tuberculous lymphadenitis.

3. Congenital conditions: Most solitary lateral neck masses in the pediatric age group are congenital in origin eg,branchial cyst, haemangiomas and lymphangiomas such as cystic hygroma
4. Neoplasia

Adult neck masses

The majority of adult neck masses are malignant in origin, with metastatic squamous cell carcinoma from the upper aerodigestive tract being the commonest cause. Benign masses constitute about 20% of the total and these include:-

1. Midline neck masses: Thyroid masses, miscellaneous midline masses e.g thyroglossal cysts, midline dermoids and prominent pyramidal lobe of the thyroid.
2. Lateral neck masses: Salivary gland tumors, Paraganglioma (carotid body tumor, glomus vagale), tuberculous, branchial cyst.(10–12).

1.2 LITERATURE REVIEW

Social demographic characteristics

Many head and neck diseases manifest as neck masses with a wide range of pathologies from developmental lesions to malignancies. Thus, knowledge of the prevalence of the different pathologies in this region is important for the management of patients with neck masses. Generalized lymphadenopathy is found in many systemic diseases, in which the size and consistency of the lymph nodes may not be suggestive of pathology, but their pattern of distribution is suspicious. Regarding gender, some studies have shown that neck masses occur more in males than females (3,12–19) with few studies showing neck massesto occur more in females than males, and these are the studies in which the predominant neck masses were of lymph nodes, salivary gland and thyroid gland origin (20–23).

There is wide range of age in patients with neck masses ranging from 0 day to 85 years as shown by several studies. The study done by Irani et al in Iran showed that 58.7 % of neck masses developed in the adults (≥ 40 years) and comprised both inflammatory/infectious and neoplastic lesions, while Tyagi's study in India revealed the predominant age group with neck masses to be 21-30years. Another study done in Bangladesh by Atiqur found that most patients with neck masses presented in the 3rd decade of life. The age group for the highest incidence of thyroid swelling was in the 41–60 years group in the study done in Malaysia by Htweet al on "Incidence of thyroid malignancy (13,14,21,23).

The neck masses studies in isolated pediatric population (0-18 years) have been done in several parts of the world. Panchal did a study in India on "Role of Fine Needle Aspiration Cytology of Cervical Lymph node in Pediatric Age" in which the commonest age group affected by cervical lymph nodes was found to be 7-9 years. Another study also in India by Showkat et al showed that age group of 10-12 years was commonest involved. In Kenya the study by Ogeng'o J et al revealed malignant masses to be most frequent in those aged 4-8 year. In Tanzania, the most affected age group by neck masses was 3-5 years. This was revealed in the study done in Bugando Medical Centre by Lucumay et al on "Pediatric neck masses"(3,24–26).

In the study done in Botson US by Hezrog on “Prevalence of Lymphadenopathy of the Head and Neck in Infants and Children” it was found that, overall 55% of the children had palpable nodes (17).

Thyroid cancer is a common malignancy with an apparent increasing incidence in a wide spectrum of clinical behavior and therapeutic responsiveness. It is the most common among all endocrine malignancies. The worldwide prevalence of goiter in the general population is estimated at 4%–7% and the incidence of malignancy in goitrous thyroid is about 10%. In the study done in Malaysia by Htweet al on “Incidence of thyroid malignancy among goitrous thyroid lesions from the Sarawk General Hospital in 2000-2004” it was found that, Among total of 820 consecutive goitrous thyroid cases for surgical intervention were collected within five years. Among them 17.4% were male subjects and 82.6% were female subjects. The age group for the highest incidence of thyroid swelling was in the 41–60 year age group with 45.2% followed by 42.9% of cases in the 21–40 year age group, 8.1% in the > 60 years age group, and 3.8% in the age group < 21 years (23).

Site of neck masses

About site of the neck masses, the anterior triangle was the most common anatomical site for neck masses (54.1%), followed by midline and anterior neck 45.4%, then the posterior triangle 0.5 %. These were study findings by Soussau Irani et.al in Iran. Nearly similar findings were reported in Nigeria by Osifo et al where most of the study participants (40%) their masses were located in anterior triangle, 34.3 % in the right side and 20 % in the left side. Bilateral neck masses were diagnosed in 5.7% of the children. In that study it was also revealed that only 20% of the children who were at the early stages of the disease presented directly to the study centre within the 1st week of noticing the neck mass (13,27).

Another study in India by Ozdas showed that the neck mass was located in the anterior compartment in 49 patients (38.6 %), in both the anterior and posterior compartment in 8 patients (6.3 %), in the midline in 10 patients (7.9 %), in the parotid region in 58 patients (45.7 %), and in the supraclavicular region in 2 patients (1.6 %) (28).

Panchal study on “Role of Fine Needle Aspiration Cytology of Cervical Lymphnode in Pediatric Age Group” it showed that the posterior triangle was the commonest site of lymphadenopathy (50%) of cases. Similar findings were observed in Tanzania in the study done by Lucumay et.al, in which posterior triangle was commonly involved in 79.7% of the patients. The right side was frequently involved in 44.6% of patients, followed by left side then bilateral (40.5% and 14.5%) respectively (3,24).

In Kenya, the study which was done by Ayugi on “Pattern of Congenital neck masses in Kenyan pediatric population”, the midline was the most common location followed by anterior border of sternocleidomastoid and submandibular region. Ultrasound was the commonest diagnostic investigation (29).

Cytohistopathology of neck masses

On the cytohistopathologyof neck masses Ali-mayoof did a study in Baghdad Iraq on “Neck masses in pediatric population”, According to the etiology, the inflammatory category was the main group, followed by the congenital category, neoplastic, and then inflammatory non neoplastic. The main cause of neck masses in patients under 15 years old was reactive (nonsuppurative) lymphadenitis (30).

Also Tyagi did a study in India on “Accuracy of fine needle aspiration cytology in head and neck masses” On cytological diagnosis 44.06% were inflammatory, followed by 37.29% benign and 18.64% malignant. Among males maximum number of cases were benign (16.94%) while in females were inflammatory cases (28.81%). The malignant cases were more in males (14).

There is importance of clinical assessment, endoscopic examinations, laboratory tests, and a variety of imaging studies, also fine needle aspiration biopsies since they have a good contribution to the diagnosis of neck masses. The study done in India by Ozdas on “The correlation between Clinical prediagnosis and pathology results in the diagnosis of neck masses” it showed that, Among 71 of the patients who underwent FNAC the mass was benign in 41 patients (57.7 %), malignant in 18 patients (25.3 %), and both benign and malignant in 3 patients (4.2 %), and 9 patients (12.6 %) had non diagnostic findings (28).

Unexplained lymphadenopathy in children is a major source of parental anxiety. While majority of cases are benign, some are associated with life threatening disease such as malignancy. Panchal did a study in India on “Role of Fine Needle Aspiration Cytology of Cervical Lymphnode in Pediatric Age Group. On cytology findings, 122 (46.93%) cases were diagnosed as tuberculous lymphadenitis, 69 (26.54%) cases diagnosed as chronic non-specific lymphadenitis, 43 (16.54%) cases diagnosed as reactive lymphadenitis, 10 (3.85%) cases diagnosed as acute lymphadenitis, 12 (4.62%) cases diagnosed as Non Hodgkin Lymphoma, 02 (0.76%) cases diagnosed as Hodgkin’s lymphoma, 01 (0.38%) cases diagnosed as suspicious for malignancy. Histopathological examination was possible in only 40 cases (24).

Showkat et al did a study in India on “Clinical pathological profile of cervicalfacial masses in pediatric patients” it was found that Inflammatory lesions were the commonest (48%) followed by congenital and developmental malformations (26%). In inflammatory lesions, reactive lymphadenopathy was the commonest followed by tubercular lymphadenitis. In congenital and developmental malformations hemangiomas were the commonest followed by thyroglossal cyst. Cystic lesions (non-developmental) constituted 19%, benign neoplastic lesions 7% and malignant neoplastic lesions 2% of the cases (25).

In Bangladesh Md Atiqur et al did a study on “Scenario of Fine needle aspiration cytology of neck masses in a Tertiary Care Hospital”. Inflammatory lesions reported in 60.5% among which reactive and tubercular lymphadenitis were found to be 27.8% and 23.2% respectively, benign lesions 25.7%, malignant neoplasm 8% and intermediate follicular neoplasm of the thyroid gland 5.8%. Nodular goiter was commonest thyroid lesion among the thyroid swellings (52.8%). In salivary glands pleomorphic adenoma was most common cytological findings (62.5%) and sialadenitis was 25%. Patients with soft tissue lesions comprised of 7 males and 5 females and cytologically diagnosed cases were lipoma and hemangioma. In this study lymph nodes with metastatic carcinomas were the most common (61.9%) malignant tumors of the neck region followed by lymphoma 26.2% (21).

In the study done by Nirmala et al in South Asia on "Causes of cervical lymphadenopathy", it was found that, among the diagnostic outcome 15.2% were neoplastic lesions while 84.8% were non neoplastic. About overall prevalence of various lesions, tuberculosis was the commonest (45.5%) followed by reactive lesion (27.2%), secondary metastases 11.7%, and suppurative lymphadenitis 9.5%, and lymphoma 3.4%, and cystic lesion 1.9%. Metastatic deposits were found to be the leading cause of lymphadenopathy among participants who were more than 70 years (40%) (31).

Salivary gland tumors show variation of prevalence between studies, but the range has been estimated to be 3-6% of all head and neck tumors. In the study done in Chile by Araya et al on "Incidence and prevalence of salivary gland tumors in Valparaiso, Chile" it was found that between the years 2000 and 2011, 279 salivary gland tumors were diagnosed in which the prevalence was 15.24 per 100,000 and the incidence was 2.51 per 100,000. It was found that 41.9% of the tumors occurred in male while 58.1% of the tumors occurred in females. 70.3% of the tumors were benign while 29.7% were malignant. Of the benign tumors 40.8% occurred in males while 59.2% occurred in women. Of the malignant tumors, 44.6% occurred in men and 55.4% in women (32).

The acquired pediatric neck masses constitute a diagnostic challenge. It is important to know their pattern for the purpose of formulating management protocol. The study done in Kenya by Ayugi et al on "Pattern of acquired neck masses in Kenyan pediatric population", inflammatory cases were the most common (64%), followed by malignant neoplasm (32%). The most common inflammatory cases were abscesses, reactive lymphadenopathy and tuberculous adenitis. They mainly involved upper cervical and submandibular lymph nodes and were more prevalent in those aged less than 4 years. Among malignant neck masses lymphomas were the most common (42%). Malignant masses were wide spread in location, non-tender, and most frequent in those aged 4-8 years (26).

The study done in Tanzania by Lucumay et.al on pediatric neck masses, FNAC & open biopsy were performed in all patients and revealed inflammatory lesions in 43.9% of

patients, congenital/developmental lesions in 38.5% of patients and neoplastic lesions in 14.9% patients (3).

Primary site of neck masses

Neck masses in adults they are considered pathological especially when present for longer than a week. In the study done by Bagwan and Chinoy in Mumbai India on "Cytologic Evaluation of the Enlarged Neck Node", the most common tumor metastasizing to the neck nodes was found to be the squamous carcinoma arising commonly in the tongue, alveolus, buccal mucosa and palate. Other primary sites included the lung, oesophagus, gall bladder and cervix. Among the 728 samples taken from enlarged neck nodes showed metastatic squamous cell carcinoma. The primary site of origin of the neck nodes was not known in about 64 cases. Metastatic nodes with cytohistopathology of adenocarcinoma was observed in 145 samples (7.33%) with lung being the commonest primary site (40 cases), followed by stomach (28 cases), colon/ rectum (22 cases), pancreas (9 cases), gall bladder (4 cases), ovary (4 cases), salivary gland (3 cases) and unknown primary site (25 cases). Spread from a primary salivary gland tumor was suspected in 14 cases. The features were suggestive of metastatic mucoepidermoid carcinoma in 5 cases, metastasis of adenoid cystic carcinoma in 6 cases and adenocarcinoma of salivary duct origin in 4 cases (19).

Patients with neck masses frequently present to general surgeons rather than to otolaryngologists. However, the mass may be representing a metastasis from an asymptomatic primary tumor of the head and neck, which will only be detected on thorough clinical examination. In the study done by Barakat in England on "The management of a neck mass" it was found that; Among 112 patients with neck masses 64% of them revealed a primary tumor. Radiologic screening identified few tumors not already apparent but did detect three bronchial and one esophageal carcinoma. Also, panendoscopy found few primary malignancies in patients who were normal on clinical examination. Three further bronchial carcinomas and one post cricoid carcinoma were discovered. In 12 patients, no head and neck primary was ever to become evident on regular review. However in one further patient, who underwent neck exploration prior to

referral, a primary tumor of the posterior third of the tongue appeared two years subsequently (33).

There is no established concept existing for the necessary diagnostic procedures in patients with cancer of an unknown primary (CUP). To find the primary tumor, extensive diagnostic steps are generally recommended. In the study done by Haas in Europe on "Diagnostic strategies in cervical carcinoma of an unknown primary" It was found that among 57 patients who were found to have a cervical metastasis of the upper or midneck after routine examination of the head and neck ,lymph node biopsy, rigid panendoscopy with systematic biopsies of suspect regions as well as blind biopsies of endoscopically inconspicuous regions, including the tongue base and nasopharynx and bilateral tonsillectomy led to the detection of 14 occult oropharyngeal and 5 nasopharyngeal primary tumors in the patients. These tumors were primarily diagnosed as CUP (34).

Lateral neck masses in adult patients of more than 40 years are caused by malignant tumors in more than 75% and the incidence of neoplastic cervical adenopathy continues to increase with age.

The review of data obtained electronically on neck masses by Gleeson M *et al* in London they found that, in one large series of 8500 patients with head and neck neoplasms diagnosed over a 10 year period, 475 had presented with isolated lateral neck masses. Overall, 190 patients (40%) in this subset had metastatic squamous cell carcinoma from unknown primary sites, 188 (39.5%) had lymphoma, and the remainder had either benign disease (78 patients, 16.5%), sarcoma (10.2%), or chemodectomas (9.2%). Several authors have investigated the origin of metastatic squamous cell carcinoma in patients with enlarged cervical lymph nodes.

In one of the largest series (267 patients), 74% of enlarged cervical nodes had developed from head and neck primaries and only 11% had come from primaries outside that region. These researchers concluded that, in the absence of any overt signs of infection, a lateral neck mass in an adult is either a metastatic squamous cell carcinoma or lymphoma until proved otherwise (4).

1.3 PROBLEM STATEMENT

The incidence of neoplastic cervical adenopathy continue to increase with age and more than 75% of neck masses in patients older than 40 years are representing a metastatic deposit from a primary cancer, often but not always in the upper aerodigestive tract. A new neck mass may be the only manifestation of a serious and potentially malignant pathology, especially in the adult population. In children neck masses creates anxiety to parents and family doctors because of fear of probable underlying malignancy and frequently associated cosmetic problem. In Tanzania we are lacking enough statistics about neck masses and its prevalence is not known. We also have late referral and management of patients with neck masses, and this can be due to lack of knowledge on neck masses

1.4. RATIONALE OF THE STUDY

The study determined the prevalence of neck masses at MNH and its aetiologies.

Study findings are aimed to help community, primary care clinicians and other health providers to take appropriate measures in patients with neck masses including proper diagnosis and management and if necessary early referral to higher centers where neck masses can be managed accordingly.

The study will also help the government through its Ministry of Health in updating guideline for neck masses management and allocation of resources so that neck masses can be handled properly in all health facility levels.

This study will offer the local statistics and give room for more other studies on neck masses.

The study is also done as my partial fulfillment of the requirements for the degree of MMED in Otorhinolaryngology of the Muhimbili University of Health and Allied Sciences (MUHAS).

1.5 OBJECTIVES

1.5. 1. Broad objective

To determine the prevalence and aetiologies of neck masses among patients receiving surgical services at MNH from July to December 2016

1.5.2 .Specific objectives

1. To determine the prevalence of neck masses by age and sex.

2. To determine the anatomical site of neck masses.

3. To determine the cytohistopathology of neck masses.

4. To determine the primary site of malignant neck masses.

CHAPTER TWO

2.0 METHODOLOGY

2.1 Study design

This wasa Descriptive cross sectional study.

2.2 Study area

The study was conducted at Muhimbili National Hospital involving admitted patients in ENT, OMFS, General surgery and Pediatric surgery wards. Muhimbili National Hospital is situated in Ilala Municipality; in Dar es Salaam, Tanzania. It is the largest tertiary referral hospital and serves patients referred from health facilities all over the country. MNH also serves as a teaching hospital for Muhimbili University of Health and Allied Sciences; the oldest and largest medical university in the country. Its bed capacity is 1500, among which 240 are dedicated to General surgery, Urology and pediatric surgery services, 64 beds in ENT department and 50 beds in OMFS. It attends 1000 to 1200 outpatients in a day. Outpatient clinics in various departments operate 5 days in a week and in ORL and OMFS there is average of 50 up to 70 new cases per week.

2.3 Study population

All patients admitted at ENT, OMFS, General surgery and Pediatric surgery wards at MNH from July to December 2016.

2.4 Target population

All patients with neck masses admitted at ENT, OMFS, General surgery and Pediatric surgery wards from July to December 2016**.**

2.5 Study sampling technique

Non probability, convenient sampling was used.

2.6 Sample size estimation

Sample size was calculated based on **Fisher's formula for sample size calculation for prevalence studies** as follows:

$n= (Z^{2)}p(1-p)/£^2$

Where

n = minimum sample size required

Z= statistic for the level of confidence (1.96)

p= expected prevalence.(50% was used since no prevalence was found in previous studies, as suggested in medical statistics) **(35)**

£= maximumtolerableerror, which is 4%

Thus the minimum sample size required was 600.

The adjusted for non-response (10%) was 60

Hence the minimum required sample size was 660

2.7 Recruiting participants

The 660 participants were recruited randomly from all admitted patients in ENT, OMFS, General surgery and Pediatric surgery wards from July to December 2016. Every month 110 participants were recruited randomly from all admitted patients. Participants were recruited randomly and concurrently in all wards of participating departments for the whole study period. Three days per week were used for recruiting participants. Number of patients recruited per week was 28 -29.

2.8 Inclusion criteria

All admitted patients in ENT, OMFS, General surgery and Pediatric surgery wards in MNH from July to December 2016 who willingly consented to participate in the study.

2.9 Exclusion criteria

All patients with obvious pulsatile neck masses

All patients who met inclusion criteria but refused to participate in the study

2.10 DATA COLLECTION

2.10.1 Study Protocol

Data collection was done by principal investigator and research assistants. The research assistants were specialists and residents from ENT, OMFS and General surgery departments.

Baseline information was collected from participants then filled in questionnaires by the principal investigator or research assistants. Detailed clinical examination of the patients with neck masses including evaluation of nasopharynx, oral pharynx, hypopharynx and larynx was done by principal investigator and assistants using indirect laryngoscopy or flexible laryngoscopy (fiber optic nasopharyngolaryngoscopy) and findings were filled in the questionnaires. Primary site of malignant neck masses was determined by collaboration with general surgeons and ENT specialists through fiber optic nasopharyngolaryngoscopy, esophagescopy, and OGD.

FNAC of the neck masses was done by the cytopathologist to all neck masses except the ulcerated ones. Open biopsy was done on the neck masses which were ulcerated and in which FNAC had given inconclusive results. Open biopsy was done by principal investigator, experienced residents and specialists. Principal investigator also asked a help from experienced histopathologist so as to get quick and accurate histopathological results of neck masses samples from the study participants.

2.10.2 Measurement tools

A questionnaire was developed with valuable information and was pretested using a number of patients.

Headlights, laryngeal mirror, rigid and flexible scope were used for evaluation of nasopharynx, oral pharynx, hypopharynx and larynx.

Indirect laryngoscopy and fiber optic nasopharyngolaryngoscopy was used for evaluation of nasopharynx, oralpharynx, hypopharynx and larynx. This helped to know the primary tumor if the neck mass was the metastatic deposit from those areas.

For the primaries outside nasopharynx, oralpharynx, hypopharynx and larynx other evaluative measures including OGD weredone in collaboration with general surgeons and ENT specialists.

Anatomical site of neck mass was defined by the triangles in the neck

FNAC and open biopsy helped to know the cytohistopathological pattern of the neck masses.

2.10.3 Data handling and analysis

At the end of each interview the filled questionnaire were cross checked for completeness and any missing entries were corrected

Data quality check for inconsistence was done on daily bases.

The information which was collected was confidential and stored in locked filing cabinets and computer data were stored on secure, password-protected computers. Descriptive statistics such as proportions for categorical variables and means for continuous variables were estimated. CHI Square test was used to test for significance. Statistical Package of Social Sciences (SPSS) computer software version 20 was used to analyze the data collected with a consultation from biostatistician for analysis and interpretation.

A P-value of less than 0.05 was considered as statistically significant.

2.11 Ethical clearance and ethical considerations

Ethical clearence was obtained from the Research and Publication Committee of MUHAS and MNH. This research got approval of ethic committee and management of both two institutions, MUHAS and MNH.

Permission for research conduction was sought from the relevant authorities at MNH. Respondents gave consent on behalf of their children to participate for those under 18 years of age or insane. Participants were informed that it would be voluntary and that they had the right to decline participation or withdraw at any time. The researcher gave full information about what the research entailed and plans for presentation and publication of the results to benefit medical practitioners as well as research subjects and ensured with satisfaction participants were competent to give consent. The questionnaires were administered after duly obtaining the consent of the participant's parent/guardian. Participants' privacy was highly maintained by ensuring that they would not be exposed to public when information was taken from them. The researchers ensured the anonymity of respondents by concealing their identity and keep research

data confidential for research purposes only. Any concerns raised were noted and resolved immediately.

2.12 Study limitations

Only admitted patients were recruited for the study. Patients who were attending outpatient clinics were not included therefore leading to selection bias.

CHAPTER THREE

3.0 RESULTS

TABLE 1: Age and sex distribution

Age group (years)	Male N (%)	Female N (%)	Total N (%)
≤10	186 (28.2)	146 (22.1)	332 (50.3)
11-20	19 (2.9)	45 (6.8)	64 (9.7)
21-30	23 (3.5)	37(5.6)	60 (9.1)
31-40	25 (3.8)	43(6.5)	68 (10.3)
41-50	21 (3.2)	29 (4.4)	50 (7.6)
51-60	21 (3.2)	23 (3.5)	44 (6.7)
>60	26(3.9)	16(2.4)	42 (6.4)
Total	321(48.6)	339(51.4)	660 (100)

The study enrolled 660 participants with mean age of 20.77 with S.D 21.24 years. Majority of the participants (50.3%) were aged ≤10 years. The ratio of male to female was 1: 1.06

TABLE 2: Prevalence of neck mass according to sex

	NECK MASSES		
SEX	**Yes** **N (%)**	**No** **N (%)**	**Total** **N (%)**
Male	51 (15.9)	270 (84.1)	321 (48.64)
Female	42 (12.4)	297 (87.6)	339 (51.36)
Total	93 (14.1)	567 (85.9)	660 (100)

The overall prevalence of neck masses was 14.1%. The prevalence of neck masses among males and females were 15.9% and 12.4% respectively, with p-value of 0.197 which is not statistically significant different.

TABLE 3: Prevalence of neck masses according to age

	NECK MASSES		
Age group (Years)	**Yes (%)**	**No (%)**	**Total (%)**
≤ 10	9 (2.7)	323 (97.3)	332 (50.3)
11-20	7 (10.9)	57 (89.1)	64 (9.70)
21-30	8 (13.3)	52 (86.7)	60 (9.1)
31-40	16 (23.5)	52 (76.5)	68 (10.30)
41-50	12 (24.0)	38 (76.0)	50 (7.57)
51-60	17 (38.6)	27 (61.4)	44 (6.67)
>60	24 (57.1)	18 (42.9)	42 (6.36)
TOTAL	93 (14.1)	567 (85.9)	660 (100)

The highest prevalence of neck masses was in age group > 60 years (57.1%) and the lowest was in the age group ≤ 10 years (2.7%). The difference is statistically significant.(P-value0.000). The prevalence of neck masses was found to increase as the age increased.

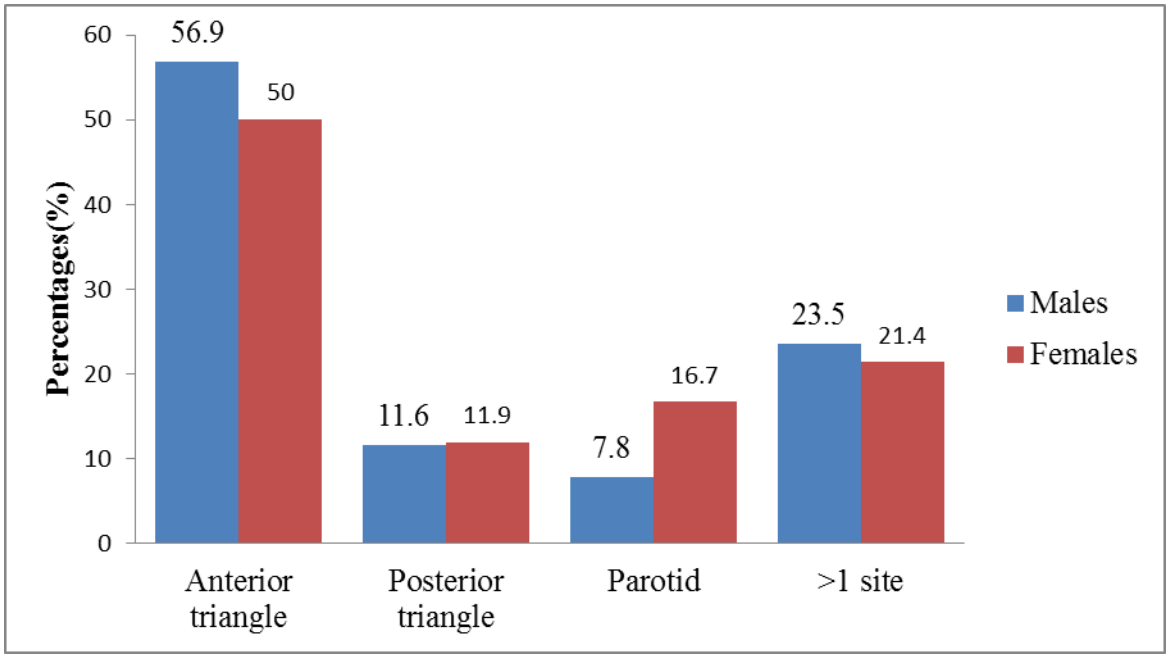
TABLE 4: Anatomical site of neck masses in relation to age

ANATOMICAL SITE OF NECK MASSES

Age grp (Years)	**ANTERIOR TRIANGLE N (%)**	**POSTERIOR TRIANGLE N (%)**	**PAROTID N (%)**	**>1 SITE N (%)**	**TOTAL N(%)**
≤ 10	7 (77.78)	1 (11.1)	0 (0)	1 (11.1)	9(9.68)
11-20	2 (28.6)	2 (28.6)	0 (0)	3 (42.8)	7(7.53)
21-30	6 (75.0)	0 (0)	1 (12.5)	1(12.5	8(8.60)
31-40	5(31.2)	3 (18.8)	3 (18.8)	5(31.2)	16(17.2)
41-50	8(66.7)	2 (16.7)	1(8.3)	1(8.3)	12(12.9)
51-60	8(47.1)	1(5.9)	5(29.4)	3(17.6)	17(18.28)
>60	14(58.3)	2(8.3)	1(4.2)	7(29.2)	24(25.81)
TOTAL	**50(53.8)**	11 (11.8)	11 (11.8)	21(22.6)	93(100)

Anterior triangle was the leading anatomical site in the neck with neck masses (53.8%) and 22.6% of the neck masses occupied > 1 site. (P-value 0.065).

Fig: 2. Anatomical site of neck masses in relation to sex



The anatomical site of neck masses did not differ statistically significant between males and females. (P-value 0.123)

TABLE 5: Cytohistopathology of neck masses

CYTOHISTOPATHOLOGY OF NECK MASSES

Age group	**Malignant**	**Benign**	**Inflammatory**	**Total**
	N (%)	**N (%)**	**N (%)**	**N (%)**
≤ 10	1 (11.1)	5 (55.6)	3 (33.3)	9 (9.68)
11-20	6 (85.7)	0 (0)	1 (14.3)	7 (7.53)
21-30	4 (50.0)	1 (12.5)	3 (37.5)	8 (8.60)
31-40	11(68.8)	3 (18.8)	2 (12.5)	16 (17.20)
41-50	6(50.0)	6 (50.0)	0 (0)	12 (12.90)
51-60	12(70.0)	2 (11.8)	3 (17.6)	17 (18.28)
>60	21(87.5)	2 (8.3)	1 (4.2)	24 (25.81)
Total	61(65.6)	19 (20.4)	13 (14.0)	93 (100)

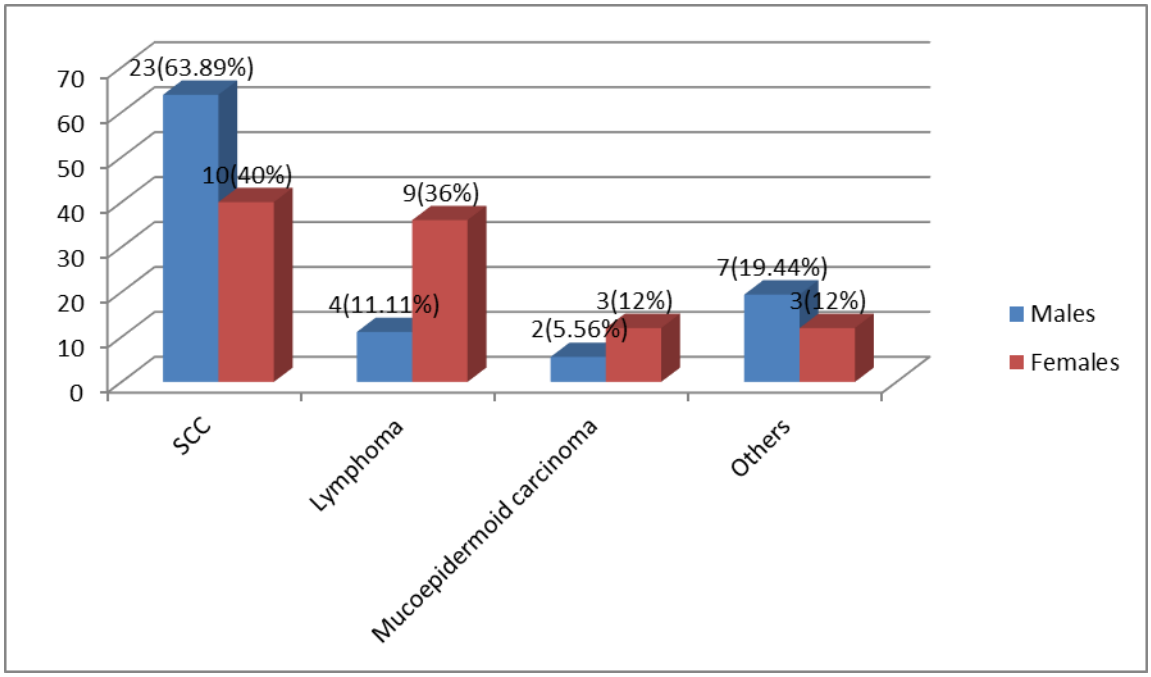
Most of the neck masses (65.6%) were malignant and age group most involved was >60 years(P-value 0.000). Inflammatory neck masses accounted for 14%

TABLE 6: Malignant neck masses in relation to age

	MALIGNANT NECK MASSES				
Age (Years)	SCC N (%)	Lymphoma N (%)	Mucoepidermoid carcinoma N (%)	Others N (%)	Total N (%)
≤ 10	0 (0)	1(100)	0(0)	0 (0)	1 (1.64)
11-20	3(50.0)	1 (16.67)	0(0)	2 (33.33)	6 (9.84)
21-30	0(0)	1(25.0)	1(25)	2(50.0)	4 (6.56)
31-40	7 (63.63)	3 (27.27)	1 (9.1)	0 (0)	11(18.03)
41-50	2 (33.33)	3 (50.0)	0(0)	1(16.67)	6 (9.84)
51-60	7 (58.33)	1(8.33)	2 (16.67)	2(16.67)	12(19.67)
> 60	14 (66.67)	3(14.29)	1(4.76)	3(14.28)	21(34.4)
Total	**33 (54.1)**	**13(21.31)**	5(8.20)	10 (16.39)	61 (100)

SCC was the leading malignant subtype in the neck masses (54.1%) and the age group mostly involved was > 60 years (P-value < 0.01). Lymphoma was the second leading malignant subtype (21.31%).

Fig 3: Malignant subtypes of neck masses in relation to sex



SCC was more common in males, while lymphoma was more common in females

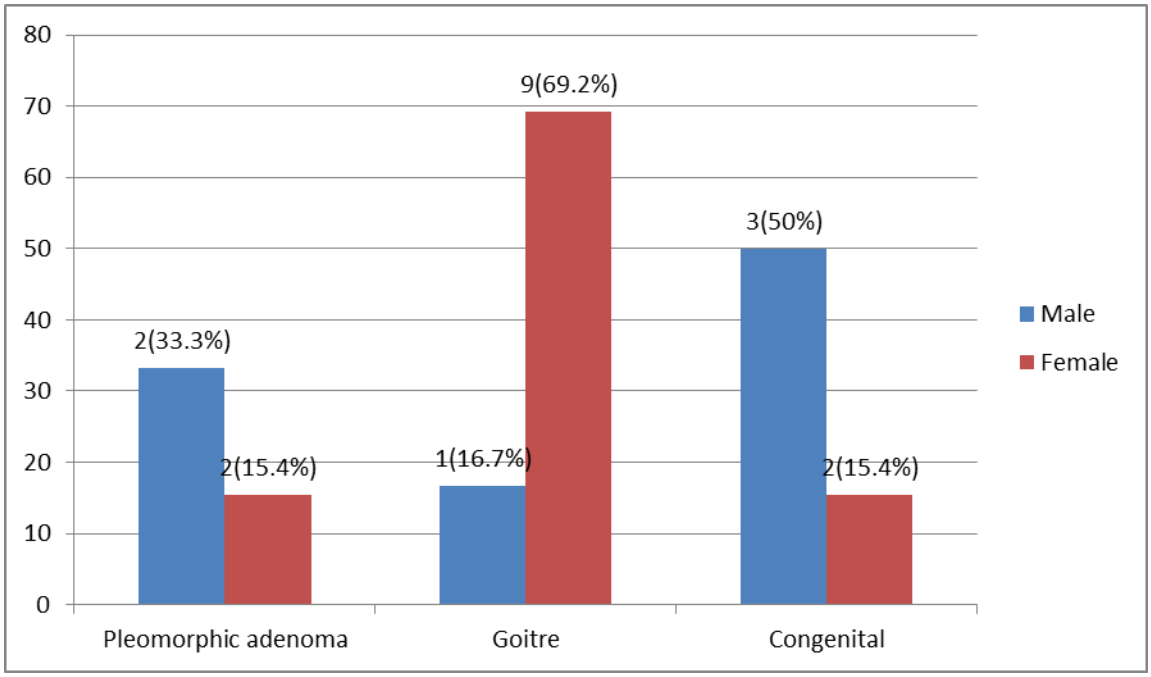
TABLE 7: Benign neck masses in relation to age

BENIGN NECK MASSES

Age grp	Pleomorphic adenoma	Goiter	**Congenital**	Total
1-10	0(0%)	0(0%)	**5 (00%)**	5 (26.32%)
11-20	0(0%)	0(0%)	**0(0%)**	0(0%)
21-30	0(0%)	1(100%)	**0(%)**	1(5.26%)
31-40	2(66.67%)	1(33.33%)	**0(0%)**	3(15.78%)
41-50	1 (16.67%)	5(83.33%)	**0(0%)**	6(31.58%)
51-60	1(50.0%)	1(50.0%)	**0 (0%)**	2(10.53%)
>60	0(0%)	2(100%)	**0(0%)**	2(10.53%
Total	4(21.05%)	10(52.63%)	**5(26.32%)**	19(100%)

Goiter was the leading benign neck mass (52.63%) and did not differ statistically significant between the age groups (P-value >0.05)

Fig 4: Benign neck masses according to sex



Goiter was more common in females compared to males.

TABLE 8: Primary site of the malignant neck masses in relation to sex

	SEX		
Primary site of neck masses	Males N (%)	Females N(%)	Total N (%)
Neck	**4 (11.1)**	3(12)	7 (11.47)
Parotid	2 (5.6)	4 (16)	6 (9.84)
Thyroid	**3 (8.3)**	1 (4)	4 (6.56)
Nasopharynx	**8(22.2)**	5 (20)	13(21.31)
Oropharynx	5(13.9)	8 (32)	13(21.31)
Hypopharynx	**5(13.9)**	3 (12)	8(13.11)
Larynx	**6(16.6)**	0 (0)	6(9.84)
Mid esophagus	**1 (2.8)**	0 (0)	1(1.64)
Submandibular	2 (5.6)	1 (4)	3(4.92)
Total	36(59)	25(41)	61 (100)

Most of the primaries were found in males than females, except for oralpharynx and parotid.

TABLE 9: Primary site of malignant neck masses in relation to age

PRIMARY SITE NECK MASSES

Age	Neck N (%)	Prtd N (%)	Thyrd N (%)	Nsphrx N (%)	Ophyrx N (%)	Hphyrx N (%)	Lyrnx N (%)	Esphg N (%)	Sbmnd N (%)	Total N (%)
≤10	1 (100)	0	0	0	0	0	0	0	0	1(1.6)
11-20	1(16.7)	0(0)	0(0)	3(50)	2(33.3)	0(0)	0(0)	0(0)	0(0)	6(9.8)
21-30	1(25)	1(25)	0(0)	0(0)	1(25)	0(0)	0(0)	0(0)	1(25)	4(6.6)
31-40	1(9.1)	1(9.1)	0(0)	5(45.4)	1(9.1)	2(18.2)	0(0)	0(0)	1(9.1)	11(18.1)
41-50	1(16.7)	0(0)	1(16.7)	2(33.2)	1(16.7)	0(0)	1(16.7)	0(0)	0(0)	6(9.8)
51-60	1(8.3)	3(25)	1(8.3)	2(16.7)	0(0)	2(16.7)	2(16.7)	1(8.3)	0(0)	12(19.7)
>60	1(4.8)	1(4.8)	2(9.5)	1(4.8)	8(38.1)	4(19)	3(14.2)	0(0)	1(4.8)	21(34.4)
Total	7(11.5)	6(9.8)	4(6.6)	13(21.3)	13(21.3)	8(13.2)	6(9.8)	1(1.6)	3(4.9)	61(100)

Nasopharynx was the leading primary site in age groups 11-20, 31-40 and 4-50, while hypopharynx was the leading site in the age group>60 years

CHAPTER FOUR

4.0 DISCUSSION

Demographical and prevalence of neck masses.

Neck masses are common worldwide and constitute a major indication for surgical consultation in many centers. The current study enrolled 660 participants with age ranging from 7 months to 90 years. The male to female ratio was 1:1.06. Most of the study participants were at the age group ≤ 10 years (50.3%). Previous studies on neck masses show that there were predominant male gender in the study participants (3,13,24,27) while others show female predominance (14,21,30) like the present study.

In this study, majority of the patients (54.8%) were seen at the hospital after 3 months up to 1 year of noticing their neck masses while 7.5% were seen in < 1 month, 16.1% within 1-3 months and 21.5% in >1 year of noticing their neck masses. This was also encountered in the study done by Elibariki Lucumay et.al on "Pediatric neck masses", in which the majority of the patients (68.9%) presented late between 1-3 years (3).

The overall prevalence of neck masses was found to be 14.1% and there was no statistic significant difference between males and females in which prevalence among males was 15.9% and among females was 12.4% with P-value of 0.197. The prevalence of neck masses was found to increase as the age increased and was statistically significant. (P-value 0.000).The study done by Soussau Irani et.al in Iran also showed that the proportion of neck masses increased as the age increased in which it was 2.7% in pediatric group, 38.6% in young adults and 58.7% in adults (13).The incidence of neoplastic cervical adenopathy continues to increase with age. This was documented by M.Gleeson et.al in London following reviewing a large series of 8500 patients with head and neck neoplasms diagnosed over a 10 year period (4).

Anatomical site of neck masses.

In this study, most of the neck masses were found in anterior triangle (53.8%) and 22.6% of the neck masses occupied > 1 site. The anatomical location of neck masses did not differ statistically significant between the age groups or sex (P-value 0.065 and 0.123 respectively).

This resembles other studies like the study done by OD. Osifo, EE. Ugiabe et.al in which 40% of the participants had neck masses on their anterior triangle, 34.3% in the right side, 20% in the left side and 5.7% bilateral (27). The similar findings were documented by S.Irani et.al in which he found that the anterior triangle was the most common anatomical site for neck masses (54.1%) (13). On contrary it differs with other studies like M. Panchal et.al (24) and Elibariki Lucumay.et.al (3), in which most of the neck masses were found in posterior triangle. This can be due to different types of populations found in the studies. These studies in which neck masses were most common in posterior triangle comprised only children population while this study comprised both children and adults. The differences in study durations and number of study participants with neck masses can also account for this difference.

Cytohistopathology of neck masses

Most of the neck masses (65.6%) were malignant and age group most involved was >60 years (P-value 0.000). Inflammatory neck masses were the least (14%). Among the malignant neck masses, SCC was the most malignant subtype found in the neck masses (54.1%) followed by lymphoma (21.31%). The findings resemble the findings obtained by MD Atiqur in which lymph nodes with metastatic carcinoma were the most common malignant (61.9%) followed by lymphoma (26.2%) (21). In the current study other malignant subtypes were adenocarcinoma, sarcoma, adenocystic carcinoma and papillary carcinoma which all together accounted for 16.39% of all malignant neck **masses.** Mucoepidermoid carcinoma accounted for 8.20%. SCC was more common in males while lymphoma was more common in females. The benign neck masses constituted of pleomorphic adenoma, goiter and congenital neck masses which constituted 3 cystic hygromas and 2 thyroglossal cysts. The benign thyroid neck masses were more common in females while malignant thyroid masses were more common in males. The malignant neck masses were more common in the age group of > 60 years ($P<0.01$) .This is because the prevalence of neck masses was found to increase as the age increased. The neck masses with squamous cell carcinoma were the metastatic nodes from primary cancers of nasopharynx, oralpharynx, hypopharynx, larynx and mid esophagus. These findings differ with other studies since most of the neck masses were

found to be inflammatory and benign (3,13,14,30). The reason of these differences can be due to different study participants with neck masses in which more were children in these studies while in this study only few children were found to have neck masses. The short study duration and different methodologies can also contribute to these differences. For example, this study enrolled only admitted patients who could be more ill due to some malignant conditions compared to outpatients in other studies who might have benign or inflammatory conditions.

Primary site of malignant neck masses.

67.21% of the malignant neck masses were the metastatic lymph nodes from primary cancers in the upper aerodigestive tracts (21.31% from nasopharynx, 21.31% oralpharynx, 13.11% hypopharynx, 9.84% larynx and 1.64% mid oesophagus). The rest of the neck masses had neck itself as the primary site while others were from salivary glands (parotid and submandibular glands). Most of the primary malignant neck masses were lymphomas. Most of the metastatic nodes were squamous cell carcinoma. This resemble the study done by I Bagwan et.al in Mumbai India, in which most common tumor metastasizing to the neck nodes had the primary somewhere else. In that study the primary cancers were from tongue,alveolus, buccal mucosa and palate (36). However the study also had metastatic nodes of unknown primary, lungs, gall bladder, cervix, ovary, colon, pancrease and stomach, as the primaries which are different from the current study in which the metastatic nodes were from pharynx, larynx and mid esophagus only, and there was no cases of unknown primary. Most of these metastatic lymph nodes were from adult study participants.

M. Gleeson.et.al documented also about management of lateral neck masses in adults and end up with the conclusion that the lateral neck mass in adult should be considered malignant unless proven otherwise (4). This study also found that most of the neck masses in adults were malignant and they were metastatic nodes from upper aerodigestive tract.

CHAPTER FIVE

5.0 CONCLUSION

Neck masses are common worldwide affecting children as well as adults. In this study, neck masses were found to be prevalent among patients receiving surgical services at MNH.The proportion of neck masses was found to increase as the age increased. The most anatomical site involved with the neck masses was anterior triangle and there was no statistically significant difference in terms of age or sex. Most of the neck masses were found to be malignant and SCC was the leading subtype. Majority of the neck masses were the metastatic lymph nodes from primary cancers in the upper aerodigestive tract. Hence neck masses should be taken seriously. Early assessment including upper aerodigestive evaluation and biopsy is important to rule out possibilities of malignancies and hence early intervention.

5.1 RECOMMENDATIONS

Continuous medical education should be given to healthcare workers in all health facility levels about the correct management of neck masses so as to avoid delay in diagnosing and managing these patients.

Education should be given to community so that people develop the early health seeking behavior once they notice the neck masses.

Large scale studies for neck masses should be done in other areas in the country involving more participants so as to get the national statistics about neck masses.

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6. APPENDICES

6.1 Informed Consent Form (English version)

Serial Number……

Title: Prevalence and Aetiology of neck masses among patients receiving surgical services at Muhimbili National hospital from June to November 2016

To the Patients/Parents/Guardians

Foreword

Greetings! I am Dr Mary Mathias working on this research project with the aim of determining the prevalenceand aetiology of neck masses among patients receiving surgical services at Muhimbili national hospital.

Purpose of the Study

This study aims at determining the prevalence of neck masses among patients receiving surgical services at MNH. We need to know this information so that we can be able to understand the magnitude of this problem in this country and educate patients and society the importance of early diagnosis and treatment for patients with neck masses. The results of this study will also help the government planning the better interventions for this condition through our recommendations so kindly be honest and free to participate.

How to participate

The interviewer will be asking you questions while he/she will be completing a questionnaire. He/she will also perform the clinical examination in order to confirm the diagnosis. Flexible instrument will be passed through your nose so as to examine the nasopharynx, oroapharynx, hypopharynx and larynx as a way of finding the origin of neck masses. Slight sedation may be applied. The sample will also be taken from the neck mass to be investigated in laboratory so as to know the type of disease in the neck mass

Risks

We do not expect any harm during the course of your participation.

Confidentialiy

We would like to assure you that all the information that you will provide will remain confidential and will be used for research purpose only. No one will be allowed to see or go through your answers except the principal investigator only.

Right to withdraw and alternatives

Taking part in this study is purely voluntary. You can stop participating at any time even if you have already given your consent. Refusal to participate or withdrawal will neither affect the quality of your treatment nor involve a penalty.

Consent

I have read and understood the explanation of the study. I accept to participate in the study.

Name and Signature of the patient/parent/guardian.....

If the patient is a child, your relationship to him/her.....

Date.....

For more information or clarification you may contact, Dr. Mary Mathias 0714911414

6.2 Informed Consent Form (Swahili version)

Fomu Ya Idhini Ya Kushiriki Katika Utafiti

Kwa Mgonjwa/Mzazi/Mlezi

Utangulizi

Habari! Mimi n iDk Mary Mathias wa Hospitali ya taifa Muhimbili ambaye ninafanya utafiti juu ya kiwango cha tatizo la uvimbe washing kwa wagonjwa wanaopatiwa huduma katika idara za upasuaji katika hospitali ya taifa Muhimbili.

Madhumuni ya Utafiti

Utafiti huu unadhamiria kuchunguza ukubwa wa tatizo la uvimbe wa shingo kwa wagonjwa wanaopatiwa huduma katika idara za upasuaji Hospitali ya taifa Muhimbili. Hii itatusaidia kuelewa tatizo kiundani katika nchi yetu ili tuweze kuelimisha jamii kwa ujumla juu ya umuhimu wa chanzo cha tatizo la uvimbe wa shingo kugundulika na kutibiwa katika hatua za awali. Matokeo ya utafiti huu yataisaidia serikali katika mipango ya kukabiliana na tatizo hili kwa kadiri tutakavyoshauri. Kwa hiyo tafadhali tunaomba uwe huru kushiriki.

Jinsi Ya Kushiriki

Msaili atakuuliza maswali kadhaa huku akijaza dodoso. Pia atakupima kwa nje na kasha atakuingizia kifaa kama kimpira puani kwa ajili ya kuchunguza pua, koo na boksi la sauti kwa ajili ya kutafuta chanzo cha uvimbe wa shingo. Kipimo hiki kitaweza kuhitaji dawa ya usingizi kidogo. Pia kinyama au vimajimaji vitachukuliwa kwenye uvimbe wa shingo kwenda kupimwa maabara ili kujua aina ya ugonjwa uliosababisha uvimbe wa shingo.

Madhara

Hatutegemei madhara yoyote wakati wa ushiriki wako.

Usiri

Tunakuhakikishia kuwa taarifa zote utakazo zitoa zitakuwa siri na zitatumika kwa utafiti tu. Hakuna mtu atakayesoma taarifa zako isipokuwa mtafiti pekee.

Haki ya Kujitoa

Kushiriki katika utafi huu ni hiari kabisa. Waweza sitisha kushiriki wakati wowote hata kama umeisha toa idhini. Kukataa kushiki ama kujitoa hakutaathiri ubora wa matibabu yako wala kupewa adhabu.

Idhini

Nimesoma na kuelewa maelezo yote ya utafiti. Ninakubali kushiriki katika utafiti huu.

Jina na Sahihi ya mgonjwa/mazazi/mlezi.....

Kama mgonjwa ni mtoto, uhusiano wako nae.....

Tarehe.....

Kwa taarifa au ufafanuzi zaidi waweza wasiliana na, Dk Mary Mathias 0714911414.

6.3 Questionnaire (English version)

TITTLE; Prevalence and aetiology of neck masses among patients receiving surgical services at MNH from July to December 2016.

Serial no……..

Hosp registration no…….Date……Residence…….

Tel, no……

1. Age…… (in months/years)

Circle where appropriate

2. Sex a). M. b). F

3. Presence of neck mass?

a). Yes b). No

4. Duration of the neck mass

a) Less than a month c). > 3months ≤ 1 year

b) 1- 3months d). > 1 year

5. Which symptoms are you experiencing/ ever experienced since or just before the onset of neck mass?

a). fever

b). sore throat

c).foreign body sensation in throat

d). difficulty in swallowing

e). painful swallowing

f).coughing blood

g). Nasal bleeding

h) hearing impairment

i) ear pain

j) difficulty in breathing

k) voice changes

l) others…… (Mention)

PART B, CLINICAL EXAMINATION

6. Site of the neck mass

a). Anterior triangle c). Parotid/pre auricular

b). Posterior triangle d).> 1site

7. Findings from indirect laryngoscopy, fiber optic nasopharyngolaryngoscopy, Oesophagoscopy, bronchoscopy and OGD.

SITE	FINDINGS
Nasopharynx	
Oral cavity, floor of mouth, base of tongue, oralpharyx	
Hypopharynx	
Larynx	
Trachea and bronchi	
Upper GI	

C. CYTOHISTOLOGY OF NECK MASSES

8. Cytohistopathological results of neck masses……

9. Histology of primary tumor ……..……

THANK YOU FOR YOUR PARTICIPATION

6.4 Questionnaire (Swahili version)

TITTLE; Kiwango cha tatizo la uvimbe wa shingoni kwa wagonjwa wanaopatiwa huduma katika idara za upasuaji Hospitali ya Taifa Muhimbili kuanzia July-December 2016.

Zungushia pale panapohitajika

Namba……...

Namba ya Hospitali……..……Tarehe……..…….Makazi……

Namba ya simu…….

1. Umri…….

2. Jinsia a) kiume b) kike

3. Uwepo wa uvimbe shingoni. a). Ndiyo b). Hapana

4. Uvimbe wa shingoni una muda gani tangu uugundue?

a). chini ya mwezi 1 c). Zaidi ya miezi 3 hadi mwaka 1

b). kati ya mwezi 1-3 d). Zaidi ya mwaka 1

5. Ni dalili zipi unazozisikia/umewahi kuzisikia tangu uvimbe kuanza au siku kadhaa kabla ya kuwepo kwa uvimbe wa shingoni?

a). Homa f) kukohoa damu g). Damu kutoka puani

b). maumivu kooni h).kupata shida ya kusikia l) mengineyo...taja

c). Kusikia kama kitu kimekwama kooni i) maumivu ya sikio

d). Kupata shida kumeza j) kupumua kwa shida

e). Maumivu wakati wa kumeza k) sauti kubadilika

SEHEMU B; UCHUNGUZI WA MWILI KITAALAMU

6. Sehemu uvimbe wa shingoni ulipo

a) Pembetatu ya mbele b). Pembetatu ya nyuma

c) mbele ya sikio (parotid) d. Sehemu zaidi ya moja

7. Matokeo ya uchunguzi wa njia ya juu ya chakula na hewa kwa kufanya indirect laryngoscopy, fiber optic nasopharyngolaryngoscopy, oesophagoscopyna bronchoscopy, na OGD

SEHEMU	MATOKEO YA UCHUNGUZI
Nasopharynx	
Oralpharynx	
Hypopharyx	
Larynx	
Trachea na bronchi	
Upper GI	

C. HISTOPATHOLOLOGIA YA UVIMBE ZINAZOTOKEA SHINGONI

8. Majibu ya histopathologia ya uvimbe wa shingoni ……..

9. Histologia ya chanzo cha uvimbe …… …….....