SHORT TERM CLINICAL OUTCOME OF TREATMENT AMONG PATIENTS WITHOESOPHAGEAL CANCER TREATED AT OCEAN ROAD CANCER INSTITUTE, DAR ES SALAAM, TANZANIA.

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By

Mamsau Ngoma, MD

A Dissertation submitted in (partial) fulfillment of the Requirements for the Degree of Master of Medicine in Clinical Oncology of Muhimbili University of Health and Allied Sciences

Muhimbili University of Health and Allied Sciences
October, 2013

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Scienc**es** a thesis / dissertation entitled: **Short term Clinical outcome of treatment among patients with esophageal cancer treated at Ocean Road Cancer Institute,**in fulfillment of the requirements for the degree of Master of Medicine (Clinical Oncology) of Muhimbili University of Health and Allied Sciences.

_____

Dr. Khamza Maunda

(Supervisor)

Date: _____

DECLARATION

AND

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I, **Mamsau Twalib Ngoma**, declare that this **dissertation** is my own original work and that it 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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taught me the meaning of work ethic, instilled in me the value of hard working.
Heartfelt thanks to my dearest daughter, Margareth-Kigh'enda E. Chacha, for giving me inspiration. You are my world.

My special thanks goes to Dassu Mussa for his everlasting love, encouragement and support.

DEDICATION

The privelege of being a daughter and the joy of being a mother are the two most profound life experiences of which I have been blessed with.

I dedicate this dissertation in memory of my loving mother Margareth Chambo Ngoma, who unfortunately lost her battle to this grave disease.

Her life long passion of helping and taking care of others has guided and encouraged me to find ways in helping others.

ABSTRACT

There has been an increasing incidence of esophageal cancer in Tanzania. According to a report done at ORCI for the period between 2006 and 2009, the number of new cases per year increased from 181 per year in 2006 to 307 cases per year in 2009.

Esophageal cancer is a disease in which malignant cells form in the tissues of the esophagus. The two most common forms of esophageal cancer are :

1. Squamous cell carcinoma: Which is the commonest type and it is also known as epidermoid carcinoma.
2. Adenocarcinoma: Cancer that begins in glandular cells. Adenocarcinomas usually form in the gastroesophageal junction.

Radiation therapy in esophageal cancer has been used for many years with good results, either as the definitive treatment or as neoadjuvant treatment to improve locoregional control of disease; and attempt to preserve the larynx in cases of cancer of the cervical esophagus or the stomach in cases that involve the distal esophagus·It is successful in relieving dysphagia in approximately 50% of patients.Chemotherapy as a single modality has limited use. Type of Chemotherapy used will depends on the tumor type, but tends to be cisplatin-based every three weeks with fluorouracil (5-FU) either continuously or every three weeks.It may be given as adjuvant or neoadjuvant therapy.

In general, the prognosis of esophageal cancer is quite poor, because most patients present with advanced disease. By the time the first symptoms such as dysphagia start manifesting themselves, the cancer has already well progressed. The overall five-year survival rate is approximately 15%, with most patients dying within the first year of diagnosis. There has been no study in Tanzania that has assessed the clinical outcome after treatment among patient with esophageal cancer. Based on the fact that acute side effects of radiotherapy normally take four weeks to disappear. The improvement of clinical symptoms and signs such as dysphagia and pain will be assessed at four weeks after completion of treatment.

Objectives

To evaluatethe shorterm outcome of treatment among patients with cancer of oesophagus treated at Ocean Road Cancer Institute for the month of April to September 2012.

Methodology

This was Prospective cohort study covering four months (from April to September 2012). A total of 87 patients were recruited but only 75 patients were available for the final analysis.The patients recruited werenew oesophagial cancer patients received at ORCI who met the inclusion criteria during the study periodData collection for this study was based on a structured questionnaire.The short-term outcomes of treatment were assessed clinically by evaluation of symptoms and signs 4 weeks after the end oftreatment.Collected data was analyzed using SPSS programme version 15.

Results

Of the 75 patients assessed in the study, 61.3% were males and 38.7% were females. The mean (SD) of the studied patients was 55.8 (16.6) years. None of the patient was diagnosed with disease at stage I but most patients were diagnosed at stage II and III of the disease; 40% and 36% respectively. A significant improvement in dysphagia symptom score was found when comparing the mean pre-treatment and post-treatment dysphagia scores. Similarly,there was a significant improvement in pain score when comparing mean pre-treatment and post-treatment pain scores. When dysphagia was categorized as present or absent, none of the patient had no dysphagia at presentation. However after treatment, a significant number of patient (32%) experienced no dysphagia. Similarly, only 10.7% of the patients had no pain at presentation and this significantly raised to 20% after treatment. The results showed that an improvement in severity of dysphagia was significantly negatively related to stage of the disease, significantly negatively related to duration from arrival at ORCI to start treatment and significantly positively related to hemoglobin level

Conclusion and Recommendations

This study found that treatment of patient with cancer of the esophagus at ORCI is associated with a significant decrease in the symptom of dysphagia as well as pain. The study also found that the decrease in the level of dysphagia is associated with early stage disease, higher hemoglobin level and shorter duration from arrival at ORCI to start treatment (waiting time).

Recommendation: This study recommends patients with cancer of the esophagus should be undergo intensive investigation to determine their disease which is important in relation to treatment outcome. Furthermore, Gastrostomy is a simple procedure that can improve the quality of life of the patients with improvement in hemoglobin level. Due to increase in number of cancer patients, there is an increasing in waiting time before starting treatment, thus ORCI should develop plan for procurement of additional treatment machines in order to reduce the waiting time.

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ABBREVIATIONS

IARC - International Agency for Research on Cancer

ESCC - Esophageal Squamous Cell Carcinoma

ORCI - Ocean Road Cancer Institute

GY - Gray

MUHAS - Muhimbili University of Health and Allied Sciences

SPSS - Statistical Package for Social Sciences

ESAS - Edmonton Symptom Assessment System

DEFINITIONS

Shorterm effects of treatment: The clinical symptoms assessed four weeks after completion of treatment

Symptom score: Score given by the patient to the level of symptom he/she experience. It is rated in likert-scale depending on the level symptom from none to very severe.

Adjuvant Chemotherapy: Cancer chemotherapy employed after the primary tumour has been removed by some other method.

Neo-adjuvant Chemotherapy: Initial use of chemotherapy in patients with localized cancer in order to decrease the tumour burden prior to treatment by other modalities.

INTRODUCTION

1.0. BACKGROUND

Oesophageal Cancer is the 8th commonest cancer accounting for 462,000 new cases per year world wide according to IARC report [1] It is the 6thcommonest cause of cancer death worldwide according to 2002 statistics.The burden of this disease has been increasing,according to 2008 data it is estimated that there are 482,300 new esophageal cancer cases and 406,800 deaths per year worldwide[2] Incidence rates vary internationally by nearly 16-fold, with the highest rates found in southern and eastern Africa and eastern Asia and lowest rates observed in western and middle Africa and central America in both males and females.[2]

In developing countries, it was the 5th commonest cancer [3] ; in Sub-Saharan Africa, 15,150 cases in males and 7,200 cases in females were estimated to occur in 2002, Oesophageal cancer is on the increase in the Sub-Saharan African Region with uneven geographical distribution. The disease incidence is exclusively higher in the eastern and southern African Sub-regions with adult males as high-risk population as they are 3 to 4 times more likely to get oesophageal cancer than females.[4] In Africa, ESCC has a strikingly uneven geographical distribution with higher concentrations in several areas, including western Kenya, a region in which the disease often strikes young people. [5,6]

There has been an increasing incidence of esophageal cancer in Tanzania. According to a report done at ORCI for the period between 2006 and 2009,the number of new cases per year increased from 181 per year in 2006 to 307 cases per year in 2009. [7]

Esophageal cancer is a disease in which malignant (cancer) cells form in the tissues of the esophagus . [8] The two most common forms of esophageal cancer are :

Squamous cell carcinoma: Cancer that forms in squamous cells, the thin, flat cells lining the esophagus. This cancer is most often found in the upper and middle part of the esophagus, but can occur anywhere along the esophagus. This is also called epidermoid carcinoma.[9]

Adenocarcinoma: Cancer that begins in glandular (secretory) cells. Glandular cells in the lining of the esophagus produce and release secretions such as mucus. Adenocarcinomas usually form in the gastroesophageal junction.[10]

The etiology of esophageal carcinoma is thought to be related to exposure of the esophageal mucosa to noxious or toxic stimuli, resulting in a sequence of dysplasia to carcinoma in situ to carcinoma.Vitamin and nutritional deficiencies have been recognized as contributing factors. In a high-risk country such as China, deficiencies in vitamin or microelement levels may play a role in causation. Riboflavin deficiency is thought to contribute to high incidence of esophageal cancer. [11] Other risk factors include:

- **Age 65 or older**. Age is the main risk factor for esophageal cancer. The chance of getting this disease goes up as you get older. In the United States, most people are 65 years of age or older when they are diagnosed with esophageal cancer.. [12]
- **Male gender**: In the United States, men are more than three times as likely as women to develop esophageal cancer. . [13,14]
- **Smoking**: People who smoke and second hand smokers are more likely than people who don't smoke to develop esophageal cancer.[15]
- **Alcohol Abuse**: People who have more than 3 alcoholic drinks each day are more likely than people who don't drink to develop squamous cell carcinoma of the esophagus. Heavy drinkers who smoke are at a much higher risk than heavy drinkers who don't smoke. In other words, these two factors act together to increase the risk even more.[16,17]
- **Diet**: Studies suggest that having a diet that's low in fruits and vegetables may increase the risk of esophageal cancer. However, results from diet studies don't always agree, and more research is needed to better understand how diet affects the risk of developing esophageal cancer. . [18,19]
- **Obesity**: Being obese increases the risk of adenocarcinoma of the esophagus. . [20,21]
- **Acid reflux**: Acid reflux is the abnormal backward flow of stomach acid into the esophagus. Reflux is very common. A symptom of reflux is heartburn, but some people don't have symptoms. The stomach acid can damage the tissue of the

esophagus. After many years of reflux, this tissue damage may lead to adenocarcinoma of the esophagus in some people.. [22]

- **Barrett esophagus**: Acid reflux may damage the esophagus and over time cause a condition known as Barrett esophagus. The cells in the lower part of the esophagus are abnormal. Most people who have Barrett esophagus don't know it. The presence of Barrett esophagus increases the risk of adenocarcinoma of the esophagus. It's a greater risk factor than acid reflux alone. Many other possible risk factors (such as smokeless tobacco) have been studied. Researchers continue to study these possible risk factor[23]

Symptoms of Oesophageal Cancer

Dysphagia is the most common presenting symptom. Dysphagia is initially experienced for solids, but eventually it progresses to include liquids. A complaint of dysphagia in an adult should always prompt an endoscopy to help rule out the presence of esophageal cancer. [2 4]

- Weight loss is the second most common symptom and occurs in more than 50% of people with esophageal carcinoma. Patients may experience bleeding.
- Pain can be felt in the epigastric or retrosternal area. It can also be felt over bony structures, representing a sign of metastatic disease.

Hoarseness caused by invasion of the recurrent laryngeal nerve is a sign of unresectability. Patients may have a persisting cough. Respiratory symptoms can be caused by aspiration of undigested food or by direct invasion of the tracheobronchial tree by the tumor. The latter is also a sign of unresectability. [24,26]

Staging

The stage of esophageal cancer is a standard summary of how far the cancer has spread.Theoutlook for people with esophageal cancer depends to a large extent, on the cancer's stage. Esophageal cancer is staged based on the results of physical examination, imaging tests, endoscopies and biopsies

The most common system used to stage esophageal cancer is the TNM system of the American Joint Committee on Cancer (AJCC).[27]

TNM staging system

T categories

This describes how deeply the cancer has grown into the wall of the esophagus or into nearby structures. Most esophageal cancers start in the innermost lining of the esophagus (the epithelium) and then grow into deeper layers over time

TX: The primary tumor can't be assessed.

T0: There is no evidence of a primary tumor.

Tis: The cancer is only in the epithelium. It has not started growing into the deeper layers. This stage is also known as high-grade dysplasia. In the past it was called carcinoma in situ.

T1: The cancer is growing into the tissue under the epithelium, such as the lamina propria, muscularis mucosa, or submucosa.

T2: The cancer is growing into the thick muscle layer (muscularispropria).

T3: The cancer is growing into the outer layer of the esophagus (the adventitia).

T4: The cancer is growing into nearby structures.

T4a: The cancer is growing into the pleura, the pericardium, or the diaphragm. The cancer can be removed with surgery.

T4b: The cancer cannot be removed with surgery because it has grown into the trachea, the aorta, the spine, or other crucial structures.

N categories

NX: Nearby lymph nodes can't be assessed.

N0: The cancer has not spread to nearby lymph nodes.

N1: The cancer has spread to 1 or 2 nearby lymph nodes.

N2: The cancer has spread to 3 to 6 nearby lymph nodes.

N3: The cancer has spread to 7 or more nearby lymph nodes.

M categories

M0: The cancer has not metastasized to distant organs or lymph nodes.

M1: The cancer has spread to distant lymph nodes and/or other organs.

Grade

The grade of a cancer is based on how normal (or differentiated) the cells look under the microscope. The higher the grade, the more abnormal the cells look. Higher grade tumors tend to grow and spread faster than lower grade tumors.

GX: The grade cannot be assessed (treated in stage grouping as G1).

G1: The cells are well-differentiated.

G2: The cells are moderately differentiated

G3: The cells are poorly differentiated

G4: The cells are undifferentiated (these cells are so abnormal that doctors can't tell if they are adenocarcinoma or squamous cell carcinoma). For staging, G4 cancers are grouped with G3 squamous cell cancers.

Staging Classification

Once the T, N, M categories have been assigned, this information is combined to assign an overall stage of 0, I, II, III, or IV. This process is called stage grouping. Some stages are further subdivided into A, B, or C. The stages identify cancers that have a similar prognosis (outlook). Patients with lower stage (stage 0-II) tend to have a better prognosis.

Stage IA	T1	N0	M0
Stage IB	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB	T1,T2	N1	M0
Stage IIIA	T4a	N0	M0
	T3	N1	M0
	T1,T2	N2	M0
Stage IIIB	T3	N2	M0
Stage IIIC	T4a	N1,N2	M0
	T4b	Any N	M0
	Any T	N3	M0
Stage IV	Any T	Any N	M1

Treatment of Esophageal Cancer

Treatment modality is determined by considering the histopathology type (adenocarcinoma or squamous cell carcinoma *vs* other types), the stage of the disease (resectable or non resectable), the general condition of the patient and other diseases present.

The ideal treatment is debatable, defendants of surgical treatment argue that resection is the only treatment modality to offer curative intent; whereas defendants of nonsurgical approach claim that esophagectomy has a prohibitive index of mortality and that esophageal cancer is an incurable disease.[28]

Oesophagectomy has been considered the treatment of choice whenever a curative resection can be performed at an acceptable risk. It has beenwell described since the

beginning of the 19th century. The first successful resection was performed in 1913 by Frank Torek.[29]

There are 3 types of esophagectomy:

1. The thoracoabdominal approach opens the abdominal and thoracic cavities together.
2. The two-stage Ivor Lewis (also called Lewis-Tanner) approach involves an initial laparotomy and construction of a gastric tube, followed by a right thoracotomy to excise the tumor and create an esophagogastric anastomosis.
3. The three-stage McKeown approach adds a third incision in the neck to complete thecervical anastomosis.

For very early esophageal cancer(Stage I and patients with carcinoma *in situ* or high-grade dysplasia) Endoscopic therapy can be used instead of surgery, it is considered a safer, less invasive and effective therapy.

Two forms of endoscopic therapy used:

1. Endoscopic mucosal resection (EMR)
2. Mucosal ablation using photodynamic therapy,Nd-YAG laser, or argon plasma coagulation.

Patients who are not candidates for surgery due to clinical conditions or advanced disease will require Palliative therapy. A single best method of palliation cannot be applied to every situation. Most patients require more than one palliative method to sustain lumen patency during the course of their disease.

Radiotherapy and Chemotherapy are frequently used alone, combined with each other or combined with surgical or endoscopic procedures in oesophageal cancer treatment.

1. Chemotherapy as a single modality has limited use. Type ofChemotherapy used will depends on the tumor type, but tends to be cisplatin-based (or carboplatin or

oxaliplatin) every three weeks with fluorouracil (5-FU) either continuously or every three weeks.It may be given as adjuvant or neoadjuvant therapy.

2. Radiation therapy in esophageal cancer has been used for many years with good results, either as the definitive treatment or as neoadjuvant treatment to improve locoregional control of disease; and attempt to preserve the larynx in cases of cancer of the cervical esophagus or the stomach in cases of commitment of the distal esophagus·It is successful in relieving dysphagia in approximately 50% of patients.

Patients with advanced esophageal cancer, preoperative combination of chemotherapy and radiotherapy is recommended. [31]

The treatment protocol used at ORCI:[32]

1. **Localized Lesions:**
   The intent of treatment is curative. Radiotherapy is the treatment of choice by using radical external beam radiation therapy and HDR Brachytherapy when available.The esophagus plus the primary nodal areas at risk are treated with a total dose of 60Gy/30#/6 weeks then a reduction of field size after receiving the first 40Gy followed by a boost dose tothe primary tumor.
2. **Loco-regionally Advanced Lesions:**
   Concomitant chemo _radiotherapy includes radical external beam radiation therapy alone to a dose of 60 Gy/30#/ 6 weeks with weekly cisplatin. The details of radical external radiotherapy are same as described above.
3. **Advanced Lesions:** External Radiation Alone: 20 GY/5#// 1 week or 30 GY/ 10# / 2 week.The response is assessed at 1-3 months with Barium swallow and oesophagoscopy. If response achieved similar course of radiation can be repeated.

Assesment of Shorterm outcome of treatment:

Based on the fact that acute side effects of radiotherapy normally take four to six weeks to dissappear.The improvement of clinical symptoms and signs such as dysphagia and pain will be assed at four and eight weeks after completion of treatment**.**

Prognosis:

In general, the prognosis of esophageal cancer is quite poor, because most patients present with advanced disease. By the time the first symptoms such as dysphagia start manifesting themselves, the cancer has already well progressed. The overall five-year survival rate (5YSR) is approximately 15%, with most patients dying within the first year of diagnosis.[24]

Individualized prognosis depends largely on stage. Those with cancer restricted entirely to the esophageal mucosa 80% have a 5yrs survival chance, but those with submucosal involvement brings it down to less than 50%. Extension into the muscularispropria (muscular layer of the esophagus) makes it go down to 20% 5YSR and extension to the structures adjacent to the esophagus results in a 7% 5YSR. Patients with distant metastases (who are not candidates for curative surgery) have a less than 3% 5YSR. .[25]

1.1 LITERATURE REVIEW

In oesophageal cancer management radiation therapy and chemotherapy work together to allow for maximal tumor control. Radiation therapy works to control disease at the local site within the esophagus. Chemotherapy not only works to control microscopic spread of the disease throughout the body, but it also acts as a radiation sensitizer, allowing the radiation to be more effective at the local site of disease.

Studies have shown thatthere is better prognosis when chemoradiation is given compared to chemotherapy or radiotherapy alone also when compared to other treatment modalities.[33]

A study done by Sgourakis et al in Germany , focusing on survival after chemotherapy and/or radiotherapy versus self-expanding metal stent insertion in the setting of inoperable esophageal cancer: found that the difference in overall survival between metal stents group and chemoradiation group was highly significant ($P < 0.01$) and in favor of chemoradiation group. However this study did not look into shortterm outcome of treatment which are important for predicting long term survival and quality of life.[34] This study looked into shorttem outcome of treatment.

As the prognosis of oesophageal cancer is poor regardless of age,it is important to determine whether the treatment given provides immediate improvement of the major symptom of oesophagial cancer,dysphagia. Inorder to improve the quality of life of oesophagial cancer patient.A study done by Semrau et al in Germany which aimed at evaluating radiotherapy in elderly patients with inoperable esophageal cancer showed that prognosis in elderly patients with inoperable esophageal cancer undergoing definitive radiotherapy/radiochemotherapy is poor, but not inferior to patients < 70 years. [35]

There are different modalities of assesing response after treatmentin cancer of oesophagus,most of the studies have used more advanced techniques which wouldnot be practical in our settings.A study done by Jayachandran P with the title postchemoradiotherapy positron emission tomography(PET) predicts pathologic response and survival in patients with esophageal cancer concluded that convectional means of assessing outcomes is still recommeded in settings wherehigh technological devices it is not available. [36].

A study done by Berger B et al in Tuebingen, Germany which aimed at assessing the Impact of radiotherapy, chemotherapy and surgery in multimodal treatment of locally advanced esophageal cancer; found that Surgery and higher radiation doses improve 2 year survival and decreased local reginal reccurence rates in subgroups of patients but without effect on overall Survival. [37] However this study did not look into shorterm outcome of treatment which have been implicated to be important in predicting recurrences.[38] .

Another study done by Rich TA, et al which looked into effect of high dose external beam radiation therapy with or without concomitant chemotherapy for esophageal carcinoma found that 2-year survival rate is in the range of 10% and at 5 years about 5%. However these studies did not assess the shorterm outcome of treatment which is related to quality of life and is the focus of the current planned study.[39]

Uniformity is lacking in reporting clinical outcomes of oesophagial cancer treatment whether it be surgery or chemoradiotherapy. A study done by Blencowe NS et al in UK[41] titled Reporting of Shorterm Clinical Outcomes after Esophagectomy found that outcome reporting after esophageal cancer surgery is heterogeneous and inconsistent. A consensus approach to reporting clinical outcomes should be considered, and at the minimum it is recommended that "core outcome set" is defined and used in all studies reporting outcomes of esophageal cancer surgery.[40] The same uniformity is requred for reporting clinical symptoms after treatment of cancer of oesophagus, this will also be addressed in this study.

1.2 PROBLEM STATEMENT

Oesophagial cancer is now the 6th leading cause of death from cancer world wide[2]Due to oesophagus distensible characteristics,patients may not recognise any symptoms until 50% of the lumina diameter is compromised.Explaining why cancer of the oesophagus is generally associated with late presentation and poor prognosis.By the time the first symptomsstarts to manifesting themselves (dysphagia is the commonest), the cancer has already well progressed. The overall five-year survival rate (5YSR) is approximately 15%, with most patients dying within the first year of diagnosis.[25]

Majority of patients attended at ORCI come with advanced stage cancer of oesophagus and therefore the intent to treat is palliation .Improving quality of life and targeting rapid relief of dysphagia is the main goal of treatment.The treatment modality is palliative radiotherapy for the advanced cases.No study has been done to analyse the acute treatment outcomes of oesophageal cancer in ORCI,it is also not know how many patients and how soon do these patients get relief of the symptoms and signs despite the fact the treatment intent may be palliative.

Staging of cancer of oesophagus can not be done efficiently in our settings because the conventional staging tools we use such as esophagoscopy or barium swallow can demonstrate only intraluminal disease extent but not the nodal status. Also the exact size of tumor cannot be determined. This study has shed light to this deficiency and has given suggestions on other investigations that can be done in our settings like esophageal ultrasound allows the visualization of both the esophageal wall and local lymph nodes.

According to WHO , response to treatment /treatment outcome can be either
Complete response (CR) defined as no macroscopic tumour.
Near complete remission : defined as a residue of only a few mm in diameter detected by endoscopy; Partial remission(PR) when at least 50% tumour reduction is found;
No change (NC) when there is variation within 50% regression and 25% progression of the tumour;Progressive disease when an increase of atleast 25% of tumour is present .

Currently in ORCI there is no uniformity in reporting responses of treatment of cancer of oesophagus and the one recommended by WHO requires expensive imaging techniques such as CT scan to determine the actual size of tumour before and after treatment.

This study will shed light on simpler methods of evalution of treatment and also provide the uniformity required for assesment of treatment outcome

1.3 JUSTIFICATION OF THE STUDY AND RATIONALE

The main research question was, what are the shorterm outcomes of treatment of oesophagial cancer patients attending ORCI.

The study has compared the clinical symptoms and signs of patients prior to treatment and four weeks after treatment. It has concentrated on assesing improvement of dysphagia which is the commonest and most distressing symptom in cancer of the oesophagus.This is very crucial because improvement of dysphagia directly improves the patients quality of life despite the disease having a poor prognosis.

This study hasassesed the improvement of other symptoms and the shorterm side effects of treatment and also the treatment modality and dosage prescribed to patients with cancer of oesophagus.

The outcome of this study has added up to the basis for development of a educational package and proper management and assesment of outcome of treatment of oesophageal cancer at ORCI and Tanzania in general.

1.4 OBJECTIVES:

The study has been guided by the following objectives:

1.4.1 Broad Objectives:

To evaluate the shorterm outcome of treatment among patients with cancer of oesophagus treated at Ocean Road Cancer Institute for the month of April to September 2012.

1.4.2 Specific Objectives:

1. To determine the social dermographic characteristics and disease profile of patients with oesophagial cancer .
2. To assess the treatment modality and dosage prescribed to patients with cancer of oesophagus.
3. To evaluate the shorterm clinical improvement of patients with cancer of oesophagus treated at ORCI.
4. To assess the relationship betweeen disease profile ,treatment modality, dose given and shortterm clinical improvements.

Hypothesis:

In this study, it is hypothesized that:

1. *Null*; There is no short term improvements after treatment, in patients with cancer of esophagus .
2. *Alternative*; There is short term improvements after treatment in patients with cancer of esophagus.

2.0 METHODOLOGY

2.1 Study Design:

Prospective cohort study covering four months (from April to September 2012)

2.2 Study Setting:

This study was be conducted at Ocean Road Cancer Institute, the only cancer centre in Tanzania, which is located in Dar es Salaam. The institute is located about 200m from the Indian Ocean along the Ocean Road. The institute has about 200 staff, both medical and non-medical. The medical staff includes oncologists, medical physicists, radiologists, radiographers, radiotherapists, medical doctors, nurses, laboratory technicians, public health specialists, epidemiologists and nuclear medicine physicians. The institute is semi -autonomous organ which is governed by the Board of Trustees and receives funding from the Ministry of Health and social welfare. The provision of cancer care services is free of charge, and patients are received from all over the country. Each year, the institute receives about 3900 to 5000 new cancer cases and attends to over 10,000 follow-up cases.

2.3 Study Population:

2.3.1 **Inclusion Criteria**

Histologically proven cancer of oesophagus treated at ORCI irrespectives of age, stage or treatment modality.

CT scan report for assessment of the stage at presentation

Treatment with radiation alone or combination of chemotherapy and radiotherapy

2.3.2 **Exclusion Criteria**

Those who died during the treatment.

Those patients who received surgical treatment

2.4 Study sample size

Sample size was calculated based on the estimated prevelence of symptomatic improvement rate of dysphagia by radiotherapy of 0.90 and 0.60 respectively among patients with cancer of oesophagus; Using double sided test, P = 0.05 and power of 90%, a sample size of 50 patients was required .The sample size was increased to 60 inorder to take into consideration drop outs.

2.5 Study sample Selection

All new oesophagial cancer patients received at ORCI from April to September 2012,who met the inclusion criteria were recruited and followed up to assess their shorterm outcome of treatment.

2.6 Study Variables:

2.6.1 Exposures

The exposures of interest will includesocio-demographic characteristics (age, sex, region,) and clinical and pathological parameters of disease. These will include the presence or absence of associated symptoms, primary site of presentation, stage of disease based on the TNM staging system (if all required investigations to allow staging are done) , histological type . Additional information from barium swallow, CXR and abdominal ultrasounds.

The diagnosis, staging and treatment decisions for all patients are made in consultation with the Oncologist at the Unit

2.6.2. Outcome / Response assessment

Clinical symptoms have been assesed during patient's first consultation.Then the clinical symptoms were assesed again 4 weeks after treatment, Therefore recording clinical symptoms before and after treatment .The symptoms and signs which will be assessed include:

1. Dysphagia:Solid food(0), Mashed food(1),Liquid(2),None(3)
2. Pain : ESAS numerical score- Rated from 0 (none) to 10 (very severe)
3. Weight loss : Absolute number of weight was assessed

Additional categories were created for patients who died, absconded or were lost to follow-up.

2.7 Data Collection

Data collection for this study was done using a structured questionnaire that recorded information on the socio-demographic data of the patients, level of cancer, stage of the disease, pre-treatment assessment, patient flow chart and time at each point, type of treatment and dose, and short-term outcome of treatment. The short-term outcomes were assed clinically by evaluation of symptoms and signs at 4 weeks after the end of treatment.

2.8 Data management

A research assistant was trained for data collection and initial data collection took place under supervision. Patient's contacts was recorded and patients were called via mobile phones if they didnt appear on their schedualed hospital appointments.

2.9 Data Analysis

All filled questionnaires were given identification numbers, coding and screened before entering into the statistical package for social science (SPSS) version 15 data base**.**Continuous data was analyzed by mean (standard deviation) and categorical data by number (percentage). During further analysis, symptoms score were categorised as present (when any of the level of the symptom was present) and none (when there was no symptom). A paired t-test was used to assess the change in symptoms score between pre-treatment and post-treatment scores. A univariate analyis was done in order to assess the association between the change in symptom scores and all the variables. Those variables in which the significant level was ≤ 0.2, were included into the final multivariate analysis.

2.10 Ethical Clearance

Taking into consideration the magnitude of the research study, the coverage of the study involved a small unit at ORCI and to some extent the small number of treated patients. It is was essential therefore to think about ethical issues relating to each of them. The study has adhered to all related ethical issues and respect was granted to the respondents' right to: privacy; confidentiality; self-determination; anonymity; and fairness.

Nevertheless ethical clearance was sought from Ethical Clearance Board (IRB) of MUHAS. Permission to conduct the study was obtained from the research, academic, publication and ethics committee of ORCI. In addition, verbal consent was obtained from esophageal cancer patients involved in the study, were informed about the study and invited to participate in the study; and those who agreed a written consent was obtained.

3.0 RESULTS

A total of 87 cases of histologically confirmed patients with cancer of esophagus were recruited into the study during the period. A total of 12 patients were excluded from the study due to inadequate information or died during the follow-up period. Thus only 75 patients were available for the final analysis.

Table 1 shows the socio-demographic characteristics of the study population. The mean (SD) age of the patients was 55.8 (16.6) years; and patients were equally distributed in all the age categories (Table 1). Majority of the patients were males (61.3%; Table 1). Most of the patients had primary education (49.3%) followed by secondary education (Table 1). Majority of the patients came from Dar-es-Salaam, the rest were from different regions around the country (Fig. 1).

Table 1: The socio-demographic characteristics of the study population (n = 75)

Variable	Frequency	Percent
Age categories (in years):		
25 – 34	8	10.7
35 – 44	9	12.0
45 – 54	19	25.3
55 – 64	19	25.3
$\geq$ 65	20	26.7
Sex:		
Male	46	61.3
Female	29	38.7
Education level:		
None	14	18.7
Primary	37	49.3
Secondary	21	29.3
College or university	2	2.7

Figure 1:A bar chart showing the distribution of residence of the study population

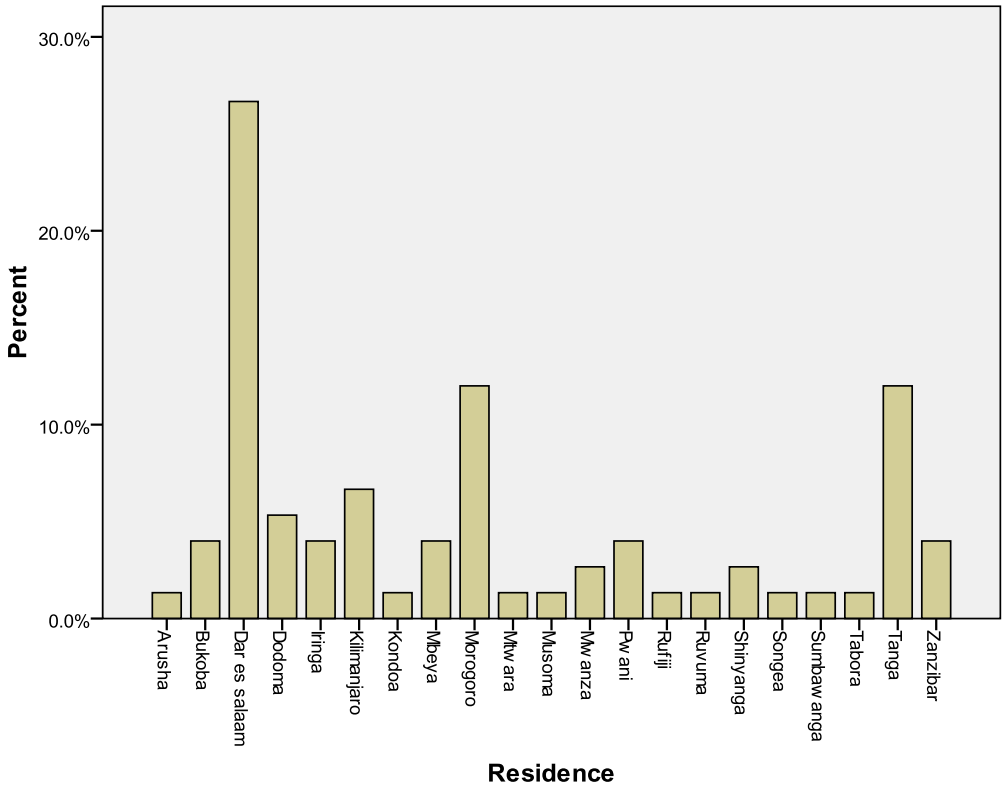


Table 2 presents the information on the disease profile of the study population. When dysphagia was categorized as present or absent, none of the patient had no dysphagia at presentation 9Table 2). However after treatment, 32% of the patient experienced no dysphagia (Table 2). Only 10.7% of the patients had no pain at presentation and this raised to 20% after treatment (Table 2). None of the patient was diagnosed with disease at stage I (Table 2).Most patients were diagnosed at stage II and III of the disease; 40% and 36% respectively (Table 2). Nearly all patients had squamous cell carcinoma as the histological type of the cancer. The mean (SD) level of the hemoglobin was 8.9 (2.3) g/dl; and majority of the patients had a hemoglobin level of $\geq$ 7.6 g/dl (Table 2). The mean (SD) level of the tumor in the esophagus from the incisor teeth detected by OGD was 30.9 (5.3) centimeter; and in majority of the patients the tumor was in the middle site of esophagus (Table 2). Of the recruited subjects, 92% of the patients had underwent computerized tomography scan (Table 2)

Table 2: The disease profile of the patients with cancer of esophagus (n = 75)

Variable	Frequency	Percent
Pre-treatment dysphagia:		
Yes	75	100.0
No	0	0.0
Post-treatment dysphagia:		
Yes	51	58.0
No	24	32.0
Pre-treatment pain:		
Yes	67	89.3
No	8	10.7
Post-treatment pain:		
Yes	60	80.0
No	15	20.0
Stage of the disease:		
I	0	0.0
II	30	40.0
III	27	36.0
IV	12	16.0
Unknown	6	8.0
Histological type:		
Squamous cell carcinoma	74	98.7
Adenocarcinoma	1	1.3
Hemoglobin level (in g/dl):		
$\leq$7.5	22	29.3
$\geq$7.6	53	70.7
Site of the cancer:		
Upper	7	9.3
Middle	42	56.0
Lower	26	34.7
CT scan results:		
Yes	69	92.0
No	6	8.0

Table 3 represents information on the treatment modalities received by the study population. Of the studied subjects, 56% were prescribed with curative intent of treatment. More than half of the subjects (57.3%) received combination of chemotherapy and radiotherapy. The chemotherapy which was given to all the studied patients was Cisplatin. The standard dose of cisplatin was 50mg given weekly for a total of 6 cycles (weeks). Of the patients who were prescribed with chemotherapy, only 29 completed all the 6 cycles while 13 did not receive all the cycles (Table 3). The mean (SD0 duration from arrival at ORCI to start treatment was found to be 3.1 (1.6) weeks. It was determined that more than half of the subjects (54.7%) had to wait for a period of 3 to 4 weeks before they started treatment (Table 3).

Table 3: Modalities of treatment received by the study population (n = 75)

Variable	Frequency	Percent
Intent of treatment:		
Curative	42	56.0
Palliative	33	44.0
Type of treatment given:		
Radiotherapy alone	32	42.7
Chemo-radiotherapy	43	57.3
Chemotherapy cycles:		
Completed cycles	29	38.6
Incomplete cycles	13	17.4
No chemotherapy prescribed	33	44.0
Duration from arrival at ORCI to start of treatment (in weeks):		
1 to 2	21	28.0
3 to 4	41	54.7
$\geq$5	13	17.3

Table 4 shows the assessment of the difference between the pre-treatment symptoms scores and post-treatment symptoms score. A significant improvement in dysphagia symptom score was found when comparing the mean pre-treatment and post-treatment scores (2.07 versus 1.08; $p < 0.001$). Similarly, a significant improvement in pain score was found when comparing mean pre-treatment and post-treatment scores (5.81 versus 3.89; $p< 0.001$). There was no significant improvement in weight when comparing the pre-treatment and post-treatment body weight ($p = 0.891$)

Table 4: The difference between the presenting symptoms score and post-treatment symptoms score among the study population (n = 75)

Variable	Value	P- value	95% Confidence Interval
Dysphagia score[a]; mean (SD):			
Pre-treatment	2.07 (0.7)	< 0.0001	0.8, 1.2
Post-treatment	1.08 (0.9)		
Pain score[b]; mean (SD):			
Pre-treatment	5.81 (3.0)	< 0.0001	1.3, 2.5
Post-treatment	3.89 (2.7)		
Weight (in kg); mean (SD):			
Pre-treatment	58.6 (7.2)	0.891	-0.5, 0.6
Post-treatment	58.5 (7.4)		

Dysphagia score[a] (0 = solid, 1 = semi-solid, 2 = liquid, 3 = none); Pain score[b] (severity rated from 0 to 10)

Table 5 shows the multiple linear regression analysis with stage of the disease, duration from arrival at ORCI to start of treatment and hemoglobin level as independent variables. The results showed that an improvement in severity of dysphagia was significantly negatively related to stage of the disease, significantly negatively related to duration from arrival at ORCI to start treatment and significantly positively related to hemoglobin level (Table 5). These results show that significant decrease in dysphagia score is associated with early stage disease, shorter duration from arrival to start treatment and higher hemoglobin level (Table 5). There was no significant relationship between improvement in dysphagia and other socio-demographic, disease profile or treatment modalities (data not known).

Using univariate linear regression analysis, there was no clinical nor statistical significance between improvement in pain score or weight and socio-demographic characteristics, disease profile as well as treatment modalities (data not shown).The factor which was statistically significant (p value <0.05) was further analyzed by using multivariate analysis.

Table 5: The association between clinical symptomatic improvement of dysphagia and disease profile as well as treatment modalities (n = 75)

	Covariates	B	SE	*P*	95% CI
ΔDysphagia score	Constant	1.39	0.50	0.007	0.39, 2.40
	Stage of disease[a]	-0.24	0.11	0.034	-0.46, -0.02
	Duration[b]	-0.34	0.14	0.018	-0.62, -0.06
	Hemoglobinlevel[c]	0.51	0.20	0.015	0.10, 0.91

ΔDysphagia (pre-treatment score – post-treatment score); B = regression coefficient; SE = standard error of regression coefficient; 95% CI = 95% confidence interval; [a]Stage of disease (I, II, III, IV); [b]Duration from arrival at ORCI to start treatment (1 = 1 – 2 weeks, 2 = 2-4 weeks, 3 = ≥ 5 weeks); [c]Hemoglobin level (1 = ≤ 7.5; 2 = ≥ 7.6).

4.0 DISCUSSION

This study found that treatment of patient with cancer of the esophagus at ORCI is associated with a significant decrease in the symptom of dysphagia as well as pain. The study also found that the decrease in the level of dysphagia is associated with early stage disease, higher hemoglobin level and shorter duration from arrival at ORCI to start treatment.

Cancer of the esophagus is the 4th leading malignancy at ORCI, and for year 2012 there were a total of 573 new patients with cancer of esophagus out of 5529 all new cancer patients (42). In our study we managed to recruit 87 patients who could meet the inclusion criteria during the period of data collection of 3 months. These patients are approximate 15.2% of the total patients with cancer of esophagus who attended ORCI in the year 2012. This being a prospective study of 4 weeks post-treatment, we managed to recruit patients more than the requirement of the study sample size.

The mean age of the patients in the study was 55.8 years and about 26.7% had equal or more than 65 years. The mean age distribution of the study population in this study is lower to what was found in a previous study
(43). The difference between the mean age in this study and the previous studies could be due to the general difference in life expectancy. The current life expectancy in Tanzania is 52 years (44) while that in Netherlands where the study was conducted in is 76.65 years (44)

In this study it was found that more males were affected with cancer of esophagus than females. This is similar to what was found in previous study done by Chandanos et al (13) which showed a higher male to female ratio among the studied patients. More males than females are affected by cancer of esophagus probably due to the main risk factors of the disease which is smoking and alcohol as it was seen in study done by Stevens Jet al. (15). In Tanzania, the prevalence of ever smoking is significantly much lower among females compared to males as seen in a study done byK Jagoe et al,(45). Similarly, in Tanzania, women drink less alcohol compared to men (46)

This study also found that 49.3% of the study population had primary education; and this is similar to what was found in other study in Tanzania in which the prevalence of primary education among the respondents was 48.6% (47).

The study population was found to come from all regions of Tanzania, but most patients (26%) came from Dar es Salaam. This study was conducted at ORCI, which is located in Dar es Salaam, and it is possible that most patients in Dar es Salaam find it easy to visit the institute while patients from other parts of the country find it difficult due to transport cost. The finding of this study is similar to what was found in the previous study conducted at ORCI which reported that about 22.7% of the studied patients were from Dar es Salaam (48).

This study found that all patients attended with the symptom of dysphagia; and the mean level of dysphagia score was 2.07 implying that most could only take liquid food. This finding is similar to what was found in the other previous study in which the most presenting symptom of patient with cancer of esophagus was dysphagia (9). It has also been reported that dysphagia is the most distressing symptom which makes most patients with cancer of esophagus attend hospital (7,9). 89.3% of the patients with cancer of the esophagus in this study presented with pain and the presenting mean pain score was 5.8. This simply that most patients had moderate pain based on the ESAS tool when attending ORCI. The findings in this study are similar to previous study which found that most patients with cancer of esophagus experience pain before treatment is done (49).

It was found that most patients were diagnosed with advanced stage of the disease, that is stage III and IV; and these stages comprised 52% of all stages. There was no patient with stage I of the disease. The finding in this study is similar to findings in previous studies which showed that most patients with cancer of esophagus are diagnosed at advanced stages and no patients were in stage I (39). The finding of advanced stage at presentation of this study is slightly lower than reported by ORCI in its annual reports (80%) presumably due to the fact that a strict inclusion criterion was implemented in the study which excluded patients who could not respond or where with too advanced stages to be treated at ORCI. Computerized tomography scan is mandatory for staging of cancer of esophagus,

and about 92% of the patients included in the study had CT scan reports which helped in staging of these patients.

The mean hemoglobin level was 8.9g/dl with majority of the patient in the category of equal or more than 7.6g/dl. This finding is similar to what was found in other previous studies which found that most patients with cancer of esophagus present with anaemia (46). Anaemia in patient with cancer of esophagus may be related to lack of eating of healthy diet due to the dysphagia (9). The protocol of treatment at ORCI describes that that a cancer patient with hemoglobin of more than 7.5g/dl can receive radiotherapy.

The mean level of the tumor in the esophagus was found to be 30.9 centimeter from the incisor teeth; with 56% of the patient with tumor in the middle area of the esophagus. These findings are similar to previous studies which showed that majority of the tumor site occur in the middle of esophagus (10). This was also reflected by the histological subtype of the tumor being squamous cell carcinoma in all but one of the patients. In a previous study (39), it showed that majority of the patient with cancer of esophagus hadadenocarcinoma as histological type; but in this study it was evident 64.8% of the patients had tumor at the distal part of the esophagus.

This study found that 57.3% of the patients were treated with combination of chemotherapy and radiotherapy, and 43.7% received only radiotherapy. The findings in this study are similar to what was found in a previous review study in which showed that chemoradiotherapy is a standard treatment for patient with unresectable esophageal cancer (50). Furthermore, these findings are in line with the treatment protocol of ORCI which describes that patients with early stage disease should receive chemo-radiation as the modality of treatment in order to increase the possibility of cure of the tumor. The chemotherapy used in the adjuvant treatment for patient with cancer esophagus was cisplatin .However it was found that not all patient in the study received chemotherapy. Furthermore, it was found that of those patients who were supposed to receive the chemotherapy, only 69% received all the 6 cycles course. Other patients could not finish all the cycles probably due to unavailability of the medicine at ORCI during the period of study or patients were not taken in-time to the chemotherapy ward for the treatment.

The mean duration in weeks from arrival at ORCI to start treatment was found to be 3.1 weeks (21 days) with majority of patients having a period of 3 to 4 weeks. This implies that patient had to wait for about 3 weeks at ORCI before they could start their treatment of either radiotherapy alone or chemo-radiation. The findings of this study arelowercomparable to findings in the previous studyin Poland which found that the average waiting time was 38 days. (51). However the shorter duration found in our study could be because our calculation of waiting time was from arrival to ORCI to start treatment, while in the previous study was from diagnosis to start treatment. At ORCI, there are only two radiotherapy machines which are Theretron Equinox cobalt 60 machine; and patients are schedule for treatment depending on first come first treated. Due to increase in number of patients, the booking for starting treatment is increasing and is reflected in this study. Furthermore, it is a routine that patient at ORCI before they start treatment they have to undergo several laboratory and imaging tests in order to assess their disease status, this presumably may also lead to delay in starting treatment.

This study found a significant decrease in the scores of dysphagia when comparing before treatment and after treatment. This imply that treatment given to patient with cancer of esophagus leads to significant improvement in their level of dysphagia by between 0.8 to 1.2 scores within a period of four weeks after treatment. For example if patients came with inability to eat anything, after treatment, the patient can eat liquid to semi-liquid (mashed) found. The findings of this study are similar to previous studies which found that treatment is associated with remarkable improvement in eating for patient with cancer of esophagus (7).

The study also found a significant improvement in the scores of pain which implies that treatment is associated with reduction in the pain symptom score ranging from 1.3 to 2.5 scores. Thus, a patient who has a pain of 6 score; 4 weeks after treatment the pain will be reduced to between 3.5 to 4.7 scores. The findings of this study are similar to findings in previous studies which found a significant reduction in pain of the patients after treatment (7).

There was a significant relationship between the decrease in the level of dysphagia and lower stage of the disease, higher hemoglobin level as well as shorter waiting time. This

imply that if patients are diagnosed with early stage disease, have hemoglobin of more than 7.5g/dl and the waiting time is shorter. The findings in this study are similar to findings in previous studies which showed that early stage of the disease is associated with better treatment outcome (26). Furthermore, other studies have shown that patients who are not anemic experience a better treatment outcome compared to patients who have anemia (47). The contribution of shorter waiting time for starting radiotherapy is obvious, and it is similar to previous studies which showed that shorter waiting time is associated with better treatment outcome (51).

Our study could not find a significant relationship between the decrease in pain or weight and any other factor. The lack of this association could be due to the subjective nature of assessing pain among the patients and that management of pain is very individualistic with combination of opioids (52).

4.1 Study Limitations

4.1.1 More follow up period was required to get a better understanding of the treatment outcome.

4.1.2 A CT Scan is crucial in the staging of cancer of the Oesophagus, currently patients who had no CT scan were not recruited into the study. And in these stage of the disease is not always documented and may affect their treatment modality and outcome.

8.1.3 The study relied on questionnaire to assess the clinical treatment outcome; the use of a more objective measure for tumor response could have been more informative.

5.0 CONCLUSIONS

Majority of patients with cancer of the esophagus who attend ORCI are elderly with mean age of 55.8 years. More men are affected by cancer of esophagus than women.

Most patients with cancer of esophagus attend with advanced stage of the disease and with mean hemoglobin level of 8.9g/dl.

This study found that treatment of patient with cancer of the esophagus at ORCI is associated with a significant decrease in the symptom of dysphagia as well as pain. The study also found that the decrease in the level of dysphagia is associated with early stage disease, higher hemoglobin level and shorter duration from arrival at ORCI to start treatment (waiting time).

5.1 Recommendations:

- ORCI needs its own CT Scan Machine,inorder to improve the diagnostic capabilities that we currently have. This will ensure all patients with cancer of esophagus undergo the investigation in order to have a correct stage of the disease

- Public Education and Regular Check-ups are very crucial to avoid getting patients at a very advanced stage which leads to poor treatment outcomes.

- Gastrostomy is a simple procedure that can improve the quality of life of the patients with cancer of Oesophagus.It has been challenging sending the patients to other hospitals,it leads to treatment delays.Having a surgeon at ORCI will really help improve the situation and it is true that with gastrostomy the Hb level of the patients will improve.

- A progression from current 2D to 3D conventional radiotherapy will also improve the treatment outcomes for our patients.

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APPENDICES

Appendix I: Consent Form

Consent to participate in study of patient with Oesophageal Cancer attending at ORCI.

Greetings

Madam/sir

My name is Dr. Mamsau Ngoma……. I am working at ORCI and I am involved in a research on Oesophageal Cancer. Am going to tell you about the study and I will ask for your consent to participate in this research. Please, be free to ask any question.

Purpose of the study

We are recruiting all new patients with esophageal cancer attending at ORCI from April to September,2012. We want to know their socio-demographic characteristics, their disease profile, medication given and shorter disease outcome i.e. one month post treatment.

Participation

Those willing to participate will be interviewed on some questions related to the research followed by physical examination. Laboratory and radiological investigations will also be done. Then patients will be requested to come one month post treatment for disease response evaluation.

Confidentiality

All information we collect from you will be confidential and will be used for the purpose of this study and better care and treatment. No one else other than the people in this research and health personnel involved in your care will have an access to this information.

Benefits and Risks

Through this study, all relevant participants will be treated with no delay. Also you will be able to get medical advice anytime you need during the study period by communicating with the doctor involved in the research. We hope that the information that we shall learn from this research will be useful in terms of offering better care and treatment for you and others.

No risk of participating into the research.

Voluntary Participation & Right to Withdraw

Your participation is voluntary and you have the right to discontinue from participating in our study at any time. However your decision to withdraw will not affect your right to care and treatment.

Contact persons

If you have questions about this study **OR** in case of any information about your rights as a participant in this study, please do not hesitate to contact:

1. The principle investigator
   Dr. Mamsau Ngoma, Resident, Department of Clinical Oncology
   Tel: 0685-377273, 0755-563151, E-mail: mamsaungoma@yahoo.com
2. Dr. Julius Mwaiselege, Coordinator: Department of Clinical Oncology
3. Dr. Khamza Maunda, Senior Lecturer – ORCI.

I _____ have understood the above information and my questions have been answered to my satisfaction. I agree to take part in this study.

Name of the participant:_____

Signature of the participant _____

Date of signed consent_____

NOTE: A Swahili version of this Consent Form was used in the field for better understanding.

Appendix II: Questionnaire

1. Serial Number …….

2. Date of recruitment/interview ……..

3. Name of the patient …… File No ……..

4. Date of birth (Age) …… years

5. Sex of the patient…….. [Male] [Female]

6. Residence: Region …….. District ……
   Village ……

7. Telephone number of patient/relative ……..

8. Diagnosis …….

9. Date of diagnosis ……..

10. Basis of diagnosis ……

11. Histology report ……

12. Stage of the disease ……..

13. Other investigation done and results
    - …… Results ……
    - ……Results ……
    - ……Results ……
    - ……Results ……

14. Basic presenting symptoms/signs of the disease

……

……

……

15. Intent of Treatment prescribed …….. [curative] [palliative]

16. Treatment prescribed …… [radiotherapy] [chemotherapy] [chemo-radiation]

17. Dose prescribed

- Radiotherapy ……
- Chemotherapy ……

18. Date of treatment planning ……

19. Date of starting treatment

- Radiotherapy …….. Technique ……
- Chemotherapy ……..

20. Duration and number of treatment given

- Radiotherapy: Duration in weeks ……..; number of fractions received
- Chemotherapy: Duration in weeks ……; Cycles received ……

21. Evaluation of short-term outcome of treatmentbefore and after receiving the prescribed treatment, by using Clinical symptoms and signs

I. Dysphagia

	Before treatment	**After treatment**
a. Solid Food	.....	.....
b. Mashed Food	.....	.....
c. Liquids only	.....	.....
d. None	.....	.....

II. Pain

ESAS pain scale-Rated from 0 (none) to 10(very severe)

	Before treatment	**After treatment**
Patient's scale	.....	.....

III Weight

	Before treatment	**After treatment**
In Kgs	.....	.....

IV:Death

a. Yes ☐

b. No