Improving palliative treatment of patients with non-operable cancer of the oesophagus: training doctors and nurses in the use of self-expanding metal stents (SEMS) in Malawi

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Abstract

Cancer of the oesophagus is the 6th most common cancer in Malawi. Nationwide only three hospitals are able to perform oesophagectomies, and there is no radiotherapy- or chemotherapy available. Owing to late presentation of the patients (sometimes in combination with co-morbidities such as HIV/AIDS or tuberculosis) the vast majority of patients are not suitable for surgery. Self-expanding metal stents (SEMS) of the oesophagus provide a suitable palliative option to improve the quality of life for patients. This project took a nationwide approach, raising funds for both technical equipment and training of endoscopists and nursing staff throughout Malawi.

Introduction

Cancer of the oesophagus is the 9th most common cancer worldwide and the 5th most common cancer in developing countries with approximately 300 000 newly diagnosed patients every year. In Africa there is a high incidence of oesophageal cancer in parts of South Africa particularly in the Transkei districts and Central and Eastern Africa, especially in the central region of Kenya, Central Zimbabwe and - of special interest for our project – Malawi with an estimated incidence in Malawi of 0.6 per 100 000 per year. Patients often present with dysphagia, but owing to the elastic properties of the oesophageal wall this is generally a sign of an advanced disease. Given that the oesophagus has no serosal layer to contain the local spread of the tumour, the cancer is locally advanced and inoperable in more than 80% of the patients at the time of first diagnosis so that the outcome is poor, with a less than 10% overall 5-year-survival rate.

The treatment of cancer of the oesophagus includes radical surgical resection with oesophageal reconstruction. Results vary depending on the stage of the disease. Combined therapies, with down-staging of the tumour with neoadjuvant radio-chemotherapy followed by surgery, seem to be more successful. There is significant morbidity associated with oesophageal resections. Palliative treatment modalities include chemo-radiation, argon-laser therapy, cryotherapy or self-expanding metal stents. Most of these are not available in developing countries because of resource and infrastructure constraints. In any case, recent advances in more aggressive radiochemotherapy for patients with late stage presentation have not provided much benefit. Self-expanding metal stents are an established palliative single treatment for patients with non-operable cancers of the oesophagus in countries without availability of radiochemotherapy. Stents provide fast, complete and life-long improvement of the leading symptom – dysphagia – with a reasonably low rate of early and late complications. So far there has been only very limited experience with SEMS in Malawi. Reasons for this include lack of reasonably priced stents, lack of training in their utilization and poor resources available for palliative care follow up. The aim of this project was to build up the capacity for a nation-wide treatment programme for patients with non-operable cancer of the oesophagus in Malawi.
applicator with a proximal and distal overlap of about 2 cm. After replacement of the applicator the SEMS expands to a size of approximately 18 mm.

Nurse training included modules on breaking bad news, counselling the patients about dietary advice after stent placement, and pain management.

Following the theoretical introduction, participants performed the placement of a SEMS, supervised by Professor White. Both real patients (who had fully consented) and a training model were used for the stent placements. At Mwaiwathu Hospital in Blantyre stents were inserted with the assistance of an image intensifier. This is not available at the other institutions.

Table 1: Participating Endoscopy Units throughout Malawi

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Type</th>
<th>Number of Beds</th>
<th>Number of Patients</th>
<th>Number of Stents</th>
<th>Number of Endoscopies per day</th>
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<td>400</td>
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<tr>
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<td>Central Government</td>
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<td>1200</td>
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<td>Zomba Central Hospital</td>
<td>Central Government</td>
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<td>2</td>
<td>300</td>
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</tbody>
</table>

Table 2: Trained doctors and treated patients during workshops.

The workshop at Blantyre was performed at Queen Elizabeth Central Hospital (QUECH) and at Mwaiwathu Private Hospital for doctors and nurses of the southern region of Malawi. At QUECH the theoretical background was taught. Afterwards placement of stents took place at both hospitals. The participants were able to see how safe stent insertion was possible despite differences between the resources of the two hospitals. Nine patients were treated with ten stents (in one patient the tumour had to be treated with two stents owing to tumour size) without any complications. The second workshop took place at Kamuzu Central Hospital at Lilongwe for doctors and nurses from the central and northern regions of Malawi. Again nine patients were treated, this time one of the possible complications occurred – a perforation during dilatation, with a right pneumothorax which was treated adequately with a chest drain. In this way participants were able to learn about the assessment and management of possible complications of stent insertion.

Discussion

In Malawi more than 90% of the oesophageal cancers found are squamous cell tumours (personal data). Beside the known risk factors – alcohol (especially spirits or local brewed beer) and smoking – there is some evidence that the consumption of maize is increasing the risk of squamous cell cancer of the oesophagus through contamination by aflatoxins (secreted from fungi that grow on stored grain) or even through a direct influence of maize on the mucosal layer of the oesophagus. Co-infections with HIV, Human Papilloma Virus, schistosomiasis, EBV and CMV may also play a role and are subject to further investigations.

Given the high frequency of oesophageal cancer, it is vital to improve the diagnosis and treatment of this disease.

The majority of patients presenting with cancer of the oesophagus in Malawi have inoperable disease at presentation. SEMS placement is a simple, effective method that can improve quality of life in this condition in resource limited settings. Adopting a nationwide approach required dedicated funds and logistical support but has enabled all endoscopy sites in Malawi to gain skills both in stent insertion and in adopting a palliative care approach to these patients and their families. Since the training, more than 120 patients have been successfully treated with SEMS with very good results in terms of improvement of dysphagia, and with a low rate of complications. These data will be published at the end of the planned follow-up of 200 patients after 12 months.

Complications are rare – early complications include bleeding, chest pain and perforation, while late complications include stent dislocation, tumour overgrowth or oesophagitis – the latter especially with a stent crossing the gastro-oesophageal junction. During the workshop one perforation happened and was treated adequately with a stent insertion, chest drain and iv-antibiotics. In a study in Kenya more than 1000

Prof. R. White demonstrating the technique of stenting to participants at Queen Elizabeth Central Hospital/Blantyre.
stents were inserted with an overall rate of perforations of approximately 3%\cite{24}. Tumour overgrowth could occur in up to 20% of patients\cite{24}; in our ongoing study, four patients out of more than 120 have had to be re-stented, but without any problem due to a blockage of the stent.

This project is unique because for the first time this technique will be used throughout Malawi in different endoscopy centres. With a lot of effort a nationwide approach was made possible to supply a whole country with a new technique. Early results have shown that the procedure is easy to learn for endoscopists and that it is safe even in resource limited countries. The success of this programme can be used also in other developing countries to improve the palliative care for patients with cancer of the oesophagus.

**Contributions**

AT and LV were responsible for the conception of the project and the organization of the training workshops for doctors. JB and LF were responsible for the conception and organization of the nurses’ training programme. LV, AK and PK were responsible for fund raising and organization of the workshop. All authors contributed to the writing of the manuscript with AT as corresponding author mainly responsible for the literature research and writing of the article and for the tables and pictures.

**Conflict of interests**

The authors declared no conflict of interests.

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