

Original Article

A comparative study of locally advanced oesophageal squamous cell carcinoma by radiation versus concurrent chemo-radiation

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Abstract

Aim: To observe the effects of radiation and concurrent chemo-radiation as treatment on locally advanced oesophageal carcinoma in human. Methods : Randomized prospective study was carried out in the Department of Radiotherapy, Dhaka Medical College and Hospital, Dhaka during the period of July 2001 to June 2002. Patients of locally advanced oesophageal carcinoma, histologically squamous cell carcinoma type was included in the study. After proper evaluation Arm-A was treated by concurrent chemotherapy weekly with Inj. Cisplatinum and Inj. 5-Flurouracil and conventional radiotherapy with a total dose of 44 Gy in 22 fractions in 4.5 weeks. Arm-B was treated by conventional radiotherapy with the same dose as that of Arm-A. Every patient was evaluated by monitoring routinely to see the responses. All the resultant informations were kept preserved on a prescribed data sheet. These informations were than analyzed statistically and results were compiled accordingly. Result : Out of 30 patients in Arm-A, complete desirable response was observed in 21 cases and partial response in 9 cases, where as out of 30 patients in Arm-B it was 13 and 17 cases respectively. Conclusion : Concurrent chemo-radiation showed better response than radiation alone, though toxicities were little bit higher but it was acceptable and easily manageable.

Introduction

Oesophageal carcinoma is substantial cause of morbidity and mortality throughout the world, with a great diversity in geographical distribution and incidence. It is the fourth most common tumour in developing countries like India¹ (Hennessy-TP 1996). In Bangladesh its position is not clear, but might not be far away from those of other countries. It is one of the most lethal carcinomas with 5-yr survival rates of less than 5% which is mainly due to late presentation² (Peacock J.L. et al 1993). It is a disease of the elderly, usually over the age of 60 yrs, more commonly in men than in women with a sex ratio of 1.8:1 90% are squamous cell carcinoma and middle third is the commonest site. Most common presenting symptom is

dysphagia, next frequent symptoms are regurgitation and vomiting³. As standard treatment protocol, surgery and radiotherapy are the common options, but the role of chemotherapy is still evolving due to a variety of radiation techniques are available and the appropriate choice for an individual patient must be made. External megavoltage irradiation is the corner stone of modern treatment in most patients.

Methods

After selection every patient was asked to give informed written consent regarding study and treatment. All patients were interviewed and informations were documented in a prescribed data collection form. A thorough clinical examination was done for each patient

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including relevant investigations such as CBC, LFT, KFT, X-ray chest P/A view, Ba-swallow X-ray of oesophagus etc. and results were recorded. Stage II and III group patients (according to UICC staging formulation) were treated. Arm-A was treated by weekly concurrent chemotherapy by Inj. Cisplatin and Inj. 5-fluorouracil with conventional radiotherapy with a total dose of 44 Gy in 22 fraction in 4.5 weeks by Cobalt-60 machine. Arm-B was treated by conventional radiotherapy with the same dose as that of Arm-A. By assessing the site and extent of the growth from Barium-swallow and endoscopic finding, a margin of 5cm above and below the tumour was specified. Target volume was decided without simulation due to lack of facilities of simulator at the Department of Radiotherapy, Dhaka Medical College and Hospital, Dhaka. The patients were treated on supine by anterior and posterior parallel-opposed fields. The field margins were marked by Gention Violet on the patient's skin.

Every patient was monitored routinely to see the response after treatment. Both complete response and partial response were seen. Complete responses were defined as patient can take liquid and solid food orally without any difficulty. Partial responses were defined as patient can take liquid without any difficulty and semisolid food with little difficulty orally. Any adverse reaction was managed properly. All the resultant informations were kept recorded on a prescribed data form sheet. These informations were than analyzes statistically.

Results

Total 60 patients of squamous cell carcinoma of oesophagus were studied in two arms, 30 patients for each. Majority of the patients were males comprising about 91.66% of total study population with a ratio of male and female as 11:1. In this study 44 patients were smoker comprising about 73.33% of total study population. Most of the patients were between 50 to 69 years, youngest patient was 42 years and oldest patient was 67 years of age. The most common presenting o symptom was dysphagia comprising 100% patients. Middle third was the commonest site on topographical distribution comprising 50% patients. Majority were ulcerative growth on endoscopic examination and histopathologically grade II. Most of the patients were illiterate and only 5% had completed graduation.

Socio-economic status was mainly poor. In post-treatment evaluation, Arm-A showed better result with complete response in 21 patients and partial response in 9 cases, whereas in Arm-B, it was 17 and 13 cases respectively.

Discussion

In this study it has been observed that squamous celcarcinoma is predominantly a disease of male with a ratio of male and female as 11:1. Though in our country no population based cancer registry has been carried out to evaluate the exact picture, but undoubtedly it is commoner in male than female. Bomford C.K. et al. agreed with this concept and mentions the figure as 1.8:1.3 Majorities of the patients were in age group 50 to 69 years comprised about 91.66% of total study population. It is a disease of elderly of mean age of 56 years which is recognized by different authors. But in developed countries like USA, UK it is most common in elderly people usually over the age of 60 years (Bomford C.K. et al.³ This is probably because of lowered life expectancy of Bangladeshi people. It is rare below 30 years of age.

It is observed that it is very common in poor socio-economic group comprising about 56.66% and rare in rich population. This study corresponds with and Ansary H.R. et. al.^{4,9} This study revealed that carcinoma oesophagus is significantly higher in low socioeconomic group. Poor hygiene and poor nutritional status related to poverty, ignorance and illiteracy may play a significant predisposing role in carcinoma oesophagus, though it is a matter of controversy. In this study about 45% patients were illiterate and 31.66% of study population had not crossed primary education. In developed countries tobacco smoking and heavy alcohol often encountered as a predisposing factor in causing carcinoma oesophagus^{6,7}. In the country of Indian subcontinent like Bangladesh, India, Pakistan, Srilanka the high incidence of oesophageal cancer has been linked to tobacco chewing with or without betel leaf and betel nut in association with tobacco smoking. In our study 44 patients were smoker; among them 19 patients were betel leaf and tobacco chewer and 16 patients habituated with betel leaf chewing only. 4 patients were alcoholic in association with smoking and betel leaf chewing. Ansary H.R. et. al. 1991 found that 73.3% patients are associated with smoking. Analysing the

On topographical distribution the middle third was the commonest site (50%) and the upper third comprised of only 1.66%.

Beside these, some tumours occupy more than one zone - upper and middle third or middle and lower third. These two varieties comprise 36.66% and 11.66% respectively. There are different studies performed at home and abroad to define the anatomical site of lesion. All of them except one revealed that the most frequently occurring site is the middle third. Rintoul R.F. reported that in carcinoma oesophagus lower third is the most common site of involvement.⁸

Macroscopical finding on endoscopic examination of the oesophageal cancer showed that ulcerative type was 58.33%, proliferative 28.33%, fungating 10% and other comprise 3.33%. Different authors paid variable opinion to define the macroscopic pattern on endoscopic examination. In our country there is a study of 175 cases of carcinoma oesophagus where showed that ulcerative type was 48.57%, proliferative 19.43% and fungating 5.14% which is consistent with the present study concept⁹.

The most common presenting symptom is dysphagia, was present in 100% patient. The symptom was progressive, first for solid and then for liquid. Next frequent symptoms are regurgitation and vomiting in 51.66% and retrosternal chest pain in 5% cases, considerable weight loss occurred in about 29% of cases. These figures are consistent with different study group of our country^{4,9}

This prospective study was carried out to determine the response of different treatment group in which one group (Arm-A) was treated by concurrent chemo-radiation and another group (Arm-B) by radiation only.

In this study in Arm-A, complete response was observed in 21 patients and partial response in 9 cases, whereas in Arm-B, it was 17 and 13 cases respectively.

The response was evaluated by -

Complete response (CR): Patient can take liquid and solid food without any difficulty orally.

Partial response (PR) : Patient can take liquid without any difficulty and semisolid with little difficulty.

Radiation responses of all patients were assessed after completion of definitive dose schedule. During treatment 19 patients were developed radiation reaction like anorexia, weakness, dysphagia, erythema and

pigmentation of skin which was managed accordingly and reactions resolved spontaneously.

That data was analyzed for test of significance using chi-squared test. In Arm-A complete response was 70% compared with 43.33% in Arm-B (P= 0.037) which is significant and null hypothesis is rejected. J.D. Cox, R. Komaki of UT M.D. Anderson Cancer Center, Department of Radiation Oncology, Houston, TX, U.S.A. done a prospective trial for patients with unresectable carcinoma of the oesophagus, which compared high dose radiation therapy alone with moderate dose radiation plus concurrent Cisplatin and 5-FU and showed a strikingly better outcome with chemoradiation; the 5 year survival rate is 26%.

Conclusion

In conclusion, concurrent chemoradiation showed better response than radiation alone, though toxicities were little bit higher but it was acceptable and easily manageable. So, concurrent chemoradiation for loco-regional control of locally advanced oesophageal carcinoma applied here demands favourable consideration. This study was compared in accordance with other studies mentioned earlier. However long term study and follow-up is recommended for further comment.

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