V) is being tested. Patients receive chemotherapy weekly, with myelo suppressive drugs at full dosage bi-weekly. By utilizing seven active agents, the cumulative dose of alkylating agents is only 25% of the amount in MOPP, the adriamycin is only 50% and the bleomycin is only 25% of the amounts in ABVD. No procarbazine or dacarbazine are given. Patients with initial bulky disease, or who have residual abnormalities receive adjuvant radiotherapy, to limited fields in the amount of 35 Gy. To date, 23 consecutive patients have achieved a complete remission of very unfavourable disease. Fertility appears to be preserved. Secondary neoplasms and late cardiac complications should be reduced.

CONCLUSION

It may well be that the preferred therapy of Hodgkin's disease in the future will utilise combined modality programs, to avoid staging laparotomy with splenectomy and reduced cumulative doses of both irradiation and the most toxic chemotherapeutic agents. These changes in management, however, should be developed and evaluated step-wise and gradually, since curability and comparisons of toxicities will require 5 to 10 years of careful documentation.

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Curative Non-surgical Combined Treatment of Squamous Cell Carcinoma of the Oesophagus

Thierry Zenone, Pascale Romestaing, René Lambert and Jean-Pierre Gerard

Between April 1982 and June 1989, 65 patients (15 T1, 13 T2, 32 T3, 5 T4) with squamous cell carcinoma of the oesophagus were treated with a curative intent with multimodality combined treatment. A first course of 5-fluorouracil and cisplatin was given during work up, especially if NdYAG laser therapy was used. Irradiation was started 3–4 weeks after induction and two courses of concomitant chemotherapy were given during the radio therapy (aiming at 64 Gy over 7 weeks). Actuarial survival was 79.6% at 1, 36.7% at 3 and 26.7% at 5 years. 5 year survival rates were 56.3% for T1, 29.8% for T2 and 12.9% for T3. All T4 cases died within 16 months. Complete initial disease response was achieved in 76%. Tolerance was good. Thus patients with squamous cell carcinoma of the oesophagus can have long survival and may be cured with combined modality therapy. This treatment may be an alternative to radical surgery when there is a high risk of operative mortality.
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INTRODUCTION

THE PROGNOSIS for a patient with oesophageal carcinoma is poor due to frequent occurrence of both distant metastasis and local recurrence. A major review of reported surgical and radiotherapeutic studies in 1980 revealed an average 5 year survival of 4–6% [1, 2]. Due to advances in technology, improvements in anaesthesia, decrease in postoperative mortality and morbidity rates, the survival has improved during the past decade and surgery is usually considered as the main curative treatment of this cancer. With radical oesophagectomy, between 10 and 30% of patients survive at 5 years [3–6]. Adjuvant therapy to surgery has been used to try and improve these results. Four randomised trials [7–10] have evaluated the effect of preoperative radiotherapy and showed no significant survival improvement in the irradiated group. Another prospective randomised trial [11] has evaluated postoperative radiotherapy and achieved similar results.

When patients are ineligible for surgery, combined modality treatment can be used sometimes in a curative intent [12, 13]. Renewed interest in this problem was stimulated by the encouraging results reported earlier [14–16] when 5-fluorouracil (5-FU) infusion and mitomycin has been combined with concurrent irradiation. Cisplatin may replace mitomycin because of the myelotoxicity of the latter and high response rate of cisplatin on epidermoid carcinoma. 5-Fluorouracil and cisplatin can be considered as radiosensitisers in humans [17]. The Wayne State University experience [18, 19] gave very encouraging results

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using concomitant 5-FU-cisplatin and radiotherapy to control the disease without surgery. As far as the other modalities are concerned, laser and photodynamic therapy (PDT) seems to have a curative effect in early superficial oesophageal cancer [20, 21]. Brachytherapy has been used as a palliative therapy [22] but can be used as a boost therapy to minimise local failures and reduce radiation toxicity [23, 24].

This paper describes our new approach in squamous cell cancer of the oesophagus using a combined modality treatment without surgery in a curative intent.

PATIENTS AND METHODS

Between 1980 and 1989, 704 patients with the diagnosis of squamous cell carcinoma of the oesophagus were seen in the radiation therapy department of Hospices Civils de Lyon. Among those patients, 180 were treated with surgery, 419 with distant metastases or T4 tumours or with recurrence after previous treatment were managed on a palliative basis. 105 were treated without surgery, with curative intent. Since 1982, our protocol included a concomitant radiochemotherapy approach. 4 patients with carcinoma *in situ* and 35 patients too ill to receive chemotherapy were excluded from analysis because they were treated by irradiation alone.

During the period from 1982 to 1989, 65 patients eligible were treated on a prospective basis with this new protocol. All these patients except 1 have been submitted to regular follow-ups and are the subject of this analysis.

Patient population

The patients (63 male, 2 female) were treated between April 1982 and June 1989. 40 patients presented with dysphagia. Other symptoms at diagnosis were: weight loss, 22; haemorrhage and vomiting, 9; pain, 7; and work up without symptom (cirrhosis, head and neck cancer) in 11 cases. Patients' characteristics are summarised in Table 1. The mean age was 64 years (median 63), the youngest patient was 44 years old and the oldest was 86. 27 were over 70 when treatment began. Some patients were very ill and malnourished (WHO performance status 2 and 3), they also had frequent medical complications related to alcohol abuse.

Table 1. Patient and tumour characteristics

	No.	Percentage
Age		
40–49	3	4.6
50–59	17	26.2
60–69	27	41.5
70–79	17	26.2
80–89	1	1.5
Performance status (WHO)		
0	6	9.2
1	44	67.7
2	12	18.5
3	3	4.6
Loss of body weight		
0–9%	37	57.0
>10%	14	21.5
unknown	14	21.5
Site distribution*		
Cervical (≥ 18 cm)	2	3.1
Upper thoracic (≥ 24 cm)	17	26.1
Mid thoracic (≥ 32 cm)	39	60.0
Lower thoracic (≥ 40 cm)	7	10.8

*UICC (distance superior border to dental arcade).

Table 2. TNM classification (UICC 1987)

	Nx	N0	N1	Total
T1	1	14	0	15
T2	4	3	1	13
T3	16	11	5	32
T4	2	1	2	5
Total	23	34	8	65

1 patient was seen 6 months after diagnosis, he previously refused treatment. Patients were excluded from surgery for the following reasons: ineligible for surgery because of medical contraindication or age, 27; because of tumour extension or its location (cervical), 7; 3 refused surgery, 28 were potentially resectable but were treated with this protocol due to individual medical decision.

Tumour characteristics

In all cases, diagnosis of squamous cell carcinoma of the oesophagus was confirmed by histology (biopsy-proven).

All patients were staged clinically and radiologically and underwent barium-swallow X-rays, computed tomography (CT) scans, endoscopy, bronchoscopy, chest X-ray and ultrasonography of the liver. Endoscopic ultrasonography has been used since 1986.

Staging and tumour location were assigned according to the criteria of TNM classification UICC 1987 [25] (identical with the recommendation of the American Joint Committee on Cancer). The data are summarised in Tables 1 and 2. 15 patients were staged as T1. 13 had T2 tumours. 37 patients had locally advanced disease (T3 and T4) when first diagnosed. Five T4 (extension beyond the oesophageal wall according to CT scanning or bronchoscopy) were included in the protocol because of their youth. The mean tumour size was 4.6 cm (median 5 cm, range 0, 5–12).

Chemotherapy

Chemotherapy was administered as follows [27]: 5-Fluorouracil 1000 mg/m^2 per day as continuous infusion on days 1–4. Cisplatin as bolus 80–100 mg/m^2 day 2 or 25 mg/m^2 per day on days 2–5. The patients received 2 l of fluid and furosemide over a 24-h period prior to receiving cisplatin.

The standard treatment (Fig. 1) was to give a first course of chemotherapy during the work up period especially if a laser therapy was used. Then, two courses of concomitant chemotherapy were given during the radiation therapy. In fact, only 55 patients received concomitant radiochemotherapy. In 10 cases, chemotherapy was not administered during irradiation but before, due to poor general condition or bad tolerance of the first cycle. In 20 patients, two courses were given before radiotherapy. Irradiation was initiated 3 or 4 weeks after induction chemotherapy and concomitant chemotherapy was started usually on the first day of radiotherapy during the first week of treatment. The second course of chemotherapy was given on week 4 or during the second cycle if a split course radiation therapy schedule was used. In case of side effects, the second course of chemotherapy was, in a few cases halved or omitted.

For 1 patient with a creatinine level greater than 15 mg/l, 5-FU alone was used. 3 patients developed angina pectoris after the first course of chemotherapy, in the other courses cisplatin alone was used.

Yag laser

During the work up period, Yag laser have been used after dilatation in 37 patients once or twice after the first course of chemotherapy mainly to improve the patients symptoms. In 5 patients with T1 N0 tumours PDT (Photo Dynamic Therapy) with haematoporphyrin derivative and laser was used immediately after chemotherapy.

Radiation therapy

The patients were treated in the radiation department of Hôpital Lyon Sud or Centre Leon Berard with a linear accelerator Saturne II delivering a photon beam of 18 MV.

The standard technique included in the target volume the tumour with a safety margin of 6 cm above and below the demonstrable lesion. A four fields box technique was used for the first part of the treatment with a median field size of 16 × 7.5 cm for the AP–PA (anterior–posterior) field and 16 × 6.5 cm for the lateral field. A boost was given on a reduced field with a rotation of 360° with Telecobalt [source axis distance (SAD) 80 cm] with a median field size of 9 × 7 cm. The dose was calculated and is reported in this paper on the 95% isodose of the ICRU point [26]. A dose of 50 Gy in 5 weeks (25 fractions of 2 Gy, 5 fractions per week) was given with the four fields box technique, then a dose of 10 to 20 Gy (2 Gy × 5 fractions per week) was added with the rotational technique. Median total dose was 64 Gy. For tumours of the upper and middle third, the supraclavicular region was irradiated with a dose of 50 Gy/5 weeks with a mixed beam of cobalt and Electron 9 MeV. For tumours of the lower third, the lymph nodes of the celiac region were included in the four fields to the level of L1.

For tumours of the upper third, if a four fields box technique cannot be used, the first part of the irradiation was given through an AP–PA technique up to 38 Gy, then an oblique anterior pair of wedge fields technique with shrinking fields was added to give 64 Gy to the target volume.

A careful treatment planning was done using external and internal contouring with Simtomix Oldelft Simulator and computerised dosimetric display and optimisation with TPS II Philips computer (Treatment Planning System).

In some cases due to the patient being very ill or having to travel a long way, some modifications were made in the time fractionation. The total "equivalent" dose of 64 Gy can be given with 4 fractions per week of 2.5 Gy or sometimes 3 fractions per week of 3 Gy. In 18 patients, a split course schedule was used with a dose of 30 Gy in 10 fractions, 12 days for the first cycle (accelerated schedule), then a rest period of 3 weeks and a second cycle of accelerated irradiation giving 15 to 24 Gy in 5 to 8 consecutive fractions. Out of the 65 patients, only 9 received a dose with time dose fractionation (TDF) less than 99 (which is equivalent to 60 Gy/30 fractions/6 weeks). The median TDF was 106 which is equivalent to 64 Gy 32 fractions in 6 weeks a half (Table 3).

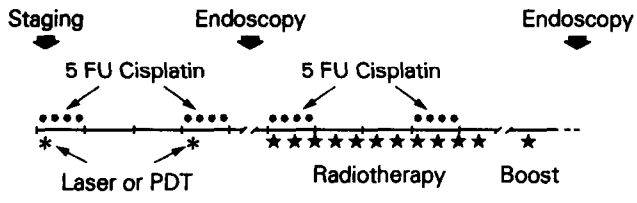

Fig. 1. Complete treatment schedule.

Table 3. Radiation therapy parameters

	No.	Percentage
× 18 MV	57	87.7
60 Co	8	12.3
4 fields (with or without rotation)	57	87.7
2 AP–PA (with or without rotation or oblique)	8	12.3
Mediastinum with supraclavicular fields	41	63.1
Mediastinum with or without celiac area	24	36.9
Continuous protracted schedule	47	72.3
Split-course	18	27.7

5 patients during 1982–1983 were included in a feasibility pilot study of intraluminal brachytherapy (5 males, 44–61 years, tumour length of 2–7 cm, 2 T1 N0 and 3 T2 N0). They were treated with external beam radiotherapy 50 Gy/25 fractions/5 weeks then the boost was given with a low dose rate iridium 192 intraluminal implant. The iridium wire was 7 cm in length and was positioned in the centre of an Atkins tube of 16 mm outer diameter. The booster dose was calculated at the surface of the tube and was 20 Gy in an average of 24 h.

Statistical analysis

The main purpose of this study was to assess survival. However, tumour response, local control and complications were also evaluated.

Analysis of survival was performed using the Kaplan–Meier method [30]. Level of significance of differences between survival curves was calculated with the Mantel–Haenszel test (logrank) [31] with $P<0.05$ considered statistically significant.

Survival was measured from the date of the first treatment. Using the Kaplan–Meier analysis, the only patient who was lost to follow-up was censored from the analysis of the survival at the time of the last known follow-up.

RESULTS

By 1 August 1990, 45 patients had died; 25 from malignant disease; 2 from a secondary malignancy (head and neck sites); 7 from associated chronic disease but clinically free of cancer (cardiovascular accident, respiratory disease, related alcohol abuse complications, upper gastrointestinal haemorrhage from oesophageal varicies); there were 11 deaths from unknown causes. 19 patients were alive and well (non-evolutive disease) with a mean survival 44 months and follow-up ranging from 15 to 94 months. The case report of 14 patients with a no evidence of disease (NED) survival of 3 years or more is summarised in Table 4. Among 7 patients with a survival of more than 3 years, 4 of them developed a second cancer (3 head and neck, 1 cardia).

1 patient was lost to follow-up shortly after (4 months). The follow-up was between 15 and 101 months (mean 64 months). 89 patients had 3 years of follow-up, 62.5% had more than 5 years.

Table 4. Case report of 14 patients with infiltrating squamous cell carcinoma of the oesophagus treated with radical non surgical treatment and with a NED (no evidence disease) survival of 3 years or more

Sex*	Age	Site†	Size (cm)	TN‡	Treatment§	Date‖	Follow up	Survival (months)
M	55	Mid.	1	T1 N0	CT + RT	July 87	Alive NED Aug. 90	37
M	47	Up.	5	T3 Nx	Laser + CT + RT	May 87	Alive NED July 90 1/88 Carcinoma of the floor mouth 1/90 Carcinoma of the tonsil	39
M	67	Low.	1	T1 Nx	CT + RT	Apr. 87	Alive NED Aug. 90	41
M	67	Mid.	7	T1 N0	PDT + CT + RT	Aug. 86	Alive NED Dec. 90	52
M	64	Low.	0.5	T1 N0	Laser + CT + RT	Aug. 86	Alive NED Aug. 90	48
M	60	Mid.	3	T3 N0	Laser + CT + RT	July 86	Alive NED Sep. 90	50
M	52	Mid.	1.5	T1 N0	PDT + CT + RT	June 86	Alive NED Aug. 90	50
F	45	Low.	1	T1 N0	CT + RT	June 84	Died July 89 NED esoph. Mar. 89 carcinoma of the tonsil	61
M	69	Mid.	5	T2 N0	CT + RT	Nov. 84	Alive NED Aug. 90 Dec. 88 carcinoma of the tonsil	69
M	71	Mid.	5	T2 N0	Laser + CT + RT	Oct. 84	Alive NED Aug. 90	70
M	52	Mid.	2	T1 N0	PDT + CT + RT	Sep. 84	Alive NED Sep. 90 Aug. 90 carcinoma of the larynx	72
M	63	Up.	8	T3 Nx	Laser + CT + RT	Mar. 84	Alive NED Aug. 90	78
M	44	Up.	2	T1 N0	Laser + CT + RT + Iridium	Jan. 83	Died June 90 NED esoph. intercurrent disease	89
M	50	Up.	7	T2 Nx	Laser + CT + RT + Iridium	Oct. 82	Alive NED Aug. 90 Mar. 85 Adenoc. cardia	94

*M = Male, F = Female. †Up = Upper third, Mid = Middle, Low = Lower. ‡UICC 1987. §CT = Chemotherapy, RT = Radiotherapy, PDT = Photodynamic therapy. ‖First treatment.

Survival

All patients were available for an analysis of actuarial survival. The overall survival curve for all patients is shown in Fig. 2. Actuarial survival was 79.6% at 1 year, 40.5% at 2 years, 36.7% at 3 years and 26.7% at 5 years. The median survival was 18 months. Actuarial survival of patients according to T classification is shown in Fig. 3. The 5 years survival rates was 56.3% for T1, 29.8% for T2, 12.9% for T3 and 0% at 2 years for T4 ($P = 0.01$). All T4 patients died within 16 months. All N1 patients died within 17 months.

There was a lower survival in patients with 2–3 WHO performance status compared with 0–1 performance status (5 years survival 12% vs. 31%, logrank $P = 0.04$). There was a suggestion of a lower than 5 years survival in 46 patients with middle or lower thoracic location compared with 19 patients with cervical or upper thoracic location (5 years survival 23.7% vs. 44.2% $P>0.05$).

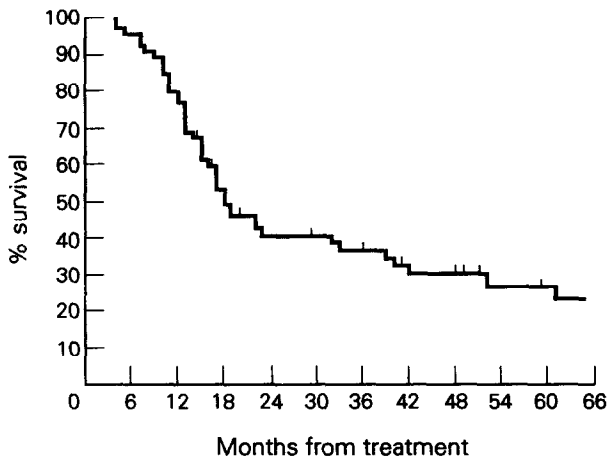

Fig. 2. Actuarial survival of the 65 patients (Kaplan–Meier Method).

Local disease control

Because of difficulty in evaluating response, only complete response (CR) was recorded. The following terms were used to define complete tumour response: disappearance of all endoscop-

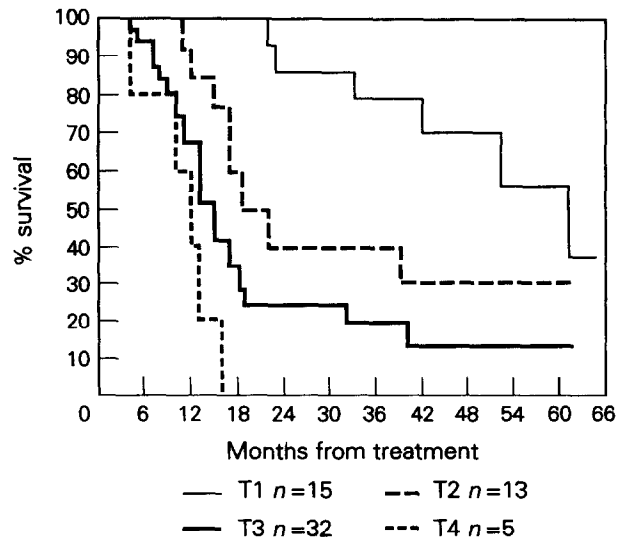

Fig. 3. Actuarial survival according to T. classification (Kaplan–Meier Method).

Table 5. Tumour response to treatment by T classification

T	No. of evaluable patients	CR (no.)	CR (%)
T1	14	14	100
T2	9	8	88.9
T3	23	15	65.2
T4	4	1	1/4
Total	50	38	76

CR = complete response.

ically visible lesion and if possible negative biopsy. In 15 patients, post-treatment evaluation of the primary oesophageal tumour was not performed or recorded, so 50 patients were available for the analysis of response. Complete initial disease response was achieved in 38 patients (76%). Table 5 summarises tumour response by T classification. All patients with partial response died within 17 months after treatment.

Among the 5 patients treated with brachytherapy as a boost, complete tumour response was achieved in 4 patients (1 T2 N0 alive and well at 94 months, 1 T1 N0 died because of intercurrent disease at 89 months, 1 T1 N0 and 1 T2 N0 died at 23 and 17 months, respectively with liver metastasis). The only one (T2 N0) with partial response (positive biopsy at the end of the treatment) died with local failure at 12 months.

After the first part of the treatment (chemotherapy with or without laser), objective response superior to 50% (complete and partial response) was observed in 70% and an amelioration of dysphagia was observed in 80%.

Patterns of failure

The type of failure could not be determined retrospectively in 12 patients, they were excluded from this analysis. Failure sites were clearly documented in 53 patients. The patterns of failure were local alone in 19 patients (35.8%), distant metastases (2 liver, 2 lung, 1 brain) alone in 5 patients (9.4%) and both local and distant (lung) in 1 case (1.9%).

Complications and toxicity

Tolerance to treatment was good. No treatment related death was recorded. Radiation oesophagitis was only mild in most cases. 70 patients had degree 1 or 2 oesophagitis according to the RTOG scale, who required an analgesic and liquid diet. 7 patients had degree 3 or 4 radiation oesophagitis with dehydration and weight loss requiring temporary hospitalisation for symptomatic treatment (nasogastric feeding tube, intravenous fluids and hyperalimantation). No treatment interruption had occured because of oesophagitis but 3 patients refused the last part of treatment (boost with arctherapy). No patient developed pericarditis, myelitis or radiation pneumonitis. 4 patients developed cutaneous reaction (2 on supraclavicular fields and 2 on photosensitisation after PDT).

4 patients developed a neutropenia less than 10/1 (degree 4 according to the EORTC scale), one patient had severe myelosuppression with fever and systemic candidiasis. 3 patients developed angina pectoris with 5-FU and 1 polyneuritis after 2 courses of cisplatin.

Intraluminal brachytherapy was, usually, easily performed and well tolerated. No early complications were observed. Only 1 patient had significant pain during the 24 h treatment.

It is sometimes difficult to separate treatment-related complications from disease related complications. Problems due to a fistula may be the results of tumour, radiation or a combination of both. 4 patients developed a tracheal or bronchial oesophageal fistula but it was probably related to progression of their malignancy and not due to the therapy.

6 patients required dilatations later to maintain their nutritional status.

DISCUSSION

This group of 65 patients was selected prospectively among 524 oesophageal cancers deemed inoperable mainly due to the extension of their disease. Only T1, T2, T3 and patients with good performance status were included in this prospective radiochemotherapy treatment given with curative intent. Endosonography was used for staging only since 1986. Keeping in mind these selection criteria, our results show that patients with squamous cell carcinoma of the oesophagus can have long term survival and may be cured with combined modality treatment without surgery. When the patients general condition is medically inadequate to tolerate an oesophagectomy, this treatment is safe and has low morbidity. With 26.7% surviving for 5 years, our results are comparable with other reports using concurrent chemotherapy and radiotherapy but, which included a smaller number of patients with shorter periods of follow-up compared with our series. Our 76% rate of complete response is comparable with the report of COIA [32] (87%). The analysis of the patterns of failures indicate that most patients died with persistent disease at the primary site. Results are better when performance status is good. We may expect better survival if this treatment is realised in patients with good performance status such as those which are potentially operable.

Radiation has been used for many years as primary treatment in patients with inoperable or unresectable oesophageal cancer. In a review of 49 published series, Earlam and Curnha-Melo [2] reported mean survival of 6% at 5 years. These results include patients treated either with palliative or curative intent.

In a series evaluating only curative treatments results ranged from 0 to 15% overall survival at 5 years [35–38] only Pearson [37] reported a 5 year survival of 20% with radiation therapy alone.

Using concomitant chemotherapy and radiotherapy with the aim of improving both local and distant control, some authors have observed improvement in survival over radiotherapy alone [16, 40, 41]. However, because of a possible selection bias inherent in a non-randomised retrospective review, this survival must be reviewed with caution. The RTOG/SWOG prospective randomised study [18, 39] seems to demonstrate that an association of 50 Gy with two concurrent courses of 5-FU (1000 mg/m^2 for 4 days) and cisplatin (75 mg/m^2) followed by two courses of the same chemotherapy regimen give better results than 64 Gy of radiotherapy alone in a randomised phase III trial including 121 patients. The 2 year survival being 38% for the combination group versus 10% for irradiation alone.

As far as the comparison between surgery and radiotherapy–chemotherapy treatment is concerned, it is impossible at the moment to make any valid comparison. Richmond *et al.* [42] compared three treatment strategies. 2 year survival with radiotherapy alone was 0%, 37% (median 12 months) for 25 patients with radiotherapy (56–60 Gy) and chemotherapy (5-FU–cisplatin), 38% (median 13 months) for 15 patients with preoperative radiotherapy (30 Gy) chemotherapy and surgery. In the Wayne State University experience [18, 19], no difference exists between patients who underwent

surgery and those who did not in the historical series (4/39 or 5/50).

Coia *et al.* [32] have treated 30 patients (23 squamous cell carcinoma and 7 adenocarcinoma) with stage I or II disease with a combination of 60 Gy and 5-FU–mitomycin. Actuarial survival at 5 years was 32%. Their conclusion was "surgical resection may not be necessary where high dose radiation and chemotherapy are used".

Other modalities can be proposed in a combined treatment: Sugimachi *et al.* [43] studied hyperthermia combined with radiotherapy and chemotherapy in squamous cell carcinoma of the oesophagus. They showed statistically significant improved survival when hyperthermia was used, in particular for stages I and II.

The HDR intracavitary irradiation [44], given with short and repeated exposures, can be considered as an interesting new method.

CONCLUSION

This is one of the first reports with a large series (65 patients) and a long follow-up of patients with squamous cell carcinoma of the oesophagus treated with multimodality approach and curative intent. A 26% survival of 5 years can be considered as an encouraging result in favour of concomitant radiochemotherapy. The results of the randomised trial of Herskovic confirm a significant advantage of chemotherapy compared to radiation alone.

When patients are inoperable, in poor surgical risk patients or in cases requiring laryngectomy (cervical location), multimodality treatment can be proposed in a curative intent. It seems to give better results than radiotherapy alone.

Is this treatment equal to surgery? This cannot be answered for the moment. Surgery remains to be the standard treatment. Randomised control trials provide the only rigorous method to compare this treatment with surgery.

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APPENDIX

Detailed table of chemotherapy and radiotherapy of 65 cases.

	Chemotherapy		Radiotherapy							Chemotherapy		Radiotherapy					
No.	A	B	C	D	E	F	G	H	No.	A	B	C	D	E	F	G	H
									33	1	2	4	1	2	0	50	1 (20)
1	1	2	4	1	1	1	64		34	1	2	4	12	1	1	60	
2	1	4	4	12	2	1	60		35	1	2	4	12	3	0	50	
3	1	2	4	1	1	0	65		36	1	2	4	2	1	0	64	
4	1	1	4	12	3	1	42		37	1	3	4	12	3	0	45	
5	1	2	4	1	1	0	60		38	1	3	2	1	1	1	70	
6	1	3	4	1	3	1	45		39	1	3	4	1	1	0	64	
7	1	1	2	1	3	1	45		40	1	3	4	1	1	0	60	
8	1	3	4	12	1	1	64		41	1	3	4	1	1	0	50	
9	1	3	4	12	2	1	62		42	1	2	4	1	1	0	50	1 (18)
10	1	3	4	1	2	1	45		43	1	1	4	1	1	1	57	
11	1	3	4	1	1	1	64		44	1	2	4	12	1	1	60	
12	1	3	2	2	1	1	60		45	1	3	2	1	1	1	62	
13	1	2	4	12	1	0	58		46	1	3	4	12	1	1	66	
14	1	4	4	1	2	1	45		47	1	1	4	12	2	0	65	
15	1	3	4	12	3	0	54		48	1	4	4	12	1	1	64	
16	1	2	4	1	1	0	50	1 (20)	49	1	2	4	12	3	1	54	
17	1	2	4	12	3	0	52		50	1	3	4	1	1	1	64	
18	1	1	2	2	3	0	45		51	1	2	4	12	1	1	59	
19	1	2	4	1	3	1	42		52	1	2	4	1	1	1	60	
20	1	5	4	12	3	1	54		53	1	2	4	12	2	1	54	
21	1	2	4	1	3	1	45		54	1	3	4	12	1	0	65	
22	1	2	4	12	2	1	60		55	1	4	4	1	3	1	45	
23	1	1	2	2	3	1	48		56	1	2	4	12	1	1	60	
24	1	1	4	1	3	0	45		57	1	2	2	1	1	1	54	
25	1	2	4	1	1	0	60		58	1	2	4	12	1	0	64	
26	1	2	4	1	1	0	58		59	1	2	4	1	1	1	56	
27	2	2	4	12	1	1	65		60	1	2	4	12	1	0	64	
28	1	2	4	2	1	0	60		61	1	1	4	2	1	1	60	
29	1	2	2	2	3	1	48		62	1	2	4	12	2	1	60	
30	1	3	4	2	3	0	45		63	1	2	4	1	1	1	70	
31	1	4	4	5	1	1	62		64	1	2	4	1	4	1	45	1 (20)
32	1	3	4	12	3	1	48		65	1	2	4	1	1	1	50	1 (18)

A = Chemotherapy regimen: 1 = 5-FU–cisplatin; 2 = 5-FU alone.
B = Number of cycles of chemotherapy.
C = Number of irradiation fields (2 or 4 fields).
D = Beam: 1 = × 18 MV; 2 = Cobalt; 12 = × 18 MV + rotation cobalt.
E = Fractionation of irradiation: 1: protracted 200 cGy × 5 per week; 2: protracted 250 cGy × 4 per week; 3: split course.
F = Treated volume: 0: mediastinum with or without celiac region; 1: mediastinum with supra clav.
G = Total dose (95% ICRU point) Gray.
H = Endoluminal iridium brachytherapy—Dose (GY) within bracket.