NICE guidance

Photodynamic therapy for early-stage oesophageal cancer

Interventional procedures guidance
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Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with

those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

1 Guidance

1.1 Current evidence on the safety of photodynamic therapy (PDT) for early-stage oesophageal cancer appears adequate. PDT appears efficacious in reducing tumour bulk in carefully selected patients with small early-stage tumours. However, the current evidence is of poor quality and relates only to short-term outcomes; it is therefore not adequate to support the use of this procedure without special arrangements for consent, audit and clinical governance.

1.2 Clinicians wishing to undertake PDT for early-stage oesophageal cancer should take the following actions.

- Inform the clinical governance leads in their Trusts.
- Ensure that patients understand the uncertainty about the procedure's efficacy and provide them with clear written information. Use of NICE's information for the public is recommended.
- Audit and review clinical outcomes of all patients having PDT for early-stage oesophageal cancer (see NICE's interventional procedures guidance audit tool template).

1.3 Further research will be useful, and clinicians are encouraged to enter patients into well-designed trials and to collect longer-term follow-up data. NICE may review the procedure upon publication of further evidence.

2 The procedure

2.1 Indications

2.1.1 Oesophageal cancer is a common cancer that is increasing in incidence. The most common histological types are adenocarcinoma and squamous cell carcinoma. Oesophageal cancer may cause difficulty in swallowing (dysphagia), weight loss, hoarseness, chronic cough and chest pain. The depth of penetration of the tumour determines the tumour stage; tumours that are superficial or have penetrated only the submucosa are defined as early-stage cancer. The treatment objective in early-stage oesophageal cancer is cure.

2.1.2 Oesophagectomy (surgical removal of the oesophagus) is the most radical treatment option for early-stage oesophageal cancer. However, it is a major operation, with the potential for mortality and serious morbidity. Some patients may be reluctant to accept oesophagectomy and others may be unfit for the treatment. Selection criteria for this procedure are not well defined. Less invasive treatments include laser ablation, radiation therapy and chemotherapy.

2.2 Outline of the procedure

2.2.1 A photosensitising agent is administered by intravenous injection and is then activated by exposing the tumour to light, usually with a low-power laser introduced through an endoscope. The photosensitising agent absorbs energy from the light (a photochemical effect), forming high-energy oxygen molecules that destroy tumour cells. A number of different photosensitising agents have been used in photodynamic therapy (PDT) for oesophageal cancer. Treatment can be performed on an outpatient basis and is usually done under sedation.

2.3 Efficacy

2.3.1 Some studies reported results for PDT as monotherapy and some for PDT in combination with other treatment modalities, making comparison of outcomes

difficult.

2.3.2 The definition of complete response or remission varied between the studies, but it was most frequently defined as no evidence of tumour on endoscopy together with negative biopsy findings. Across case series, complete response was achieved in 37% (23 out of 62), 75% (18 out of 24), 81% (43 out of 53), 97% (32 out of 33) and 100% (18 out of 18) of patients. However, the follow-up time varied between studies, and some patients received repeat PDT sessions. Where reported separately for subgroups, the response rate was 67% (22 out of 33) for stage T1a tumours and 91% (20 out of 22) for in situ squamous cell carcinomas.

2.3.3 In one case series, 5-year disease-specific survival was 72% in 56 patients treated with PDT monotherapy. In a case series of 38 patients, nine of whom received repeat PDT sessions, mean disease-free survival was 32 months. In another case series, 54% (13 out of 24) of patients were alive without recurrence at a mean follow-up of 21 months. In a case series of 18 patients treated with PDT, mean overall survival was 60.5 months. Finally, in another case series of 21 patients, the mean local-progression-free survival period was 60 months. For more details, see the overview.

2.3.4 The Specialist Advisers were divided in their opinions as to whether this procedure is established practice, or novel and of uncertain safety and efficacy.

2.4 Safety

2.4.1 Oesophageal stenosis or stricture following PDT occurred in 7% (3 out of 41), 8% (2 out of 24), 11% (2 out of 18), 13% (5 out of 38), 25% (6 out of 24) and 35% (43 out of 123) of patients, although the photosensitising agent and type of light source varied between studies. In one case series, chronic stenosis was reported to have occurred in 4% (5 out of 123) of patients.

2.4.2 Two case series each reported development of oesophagotracheal fistula following PDT in 8% of patients (2 out of 24, and 3 out of 38).

2.4.3 The most frequently reported complication reported in relation to PDT for early oesophageal cancer was skin photosensitivity, which was reported in 0% (0 out

of 24), 8% (5 out of 62) and 13% (16 out of 123) of patients. Where specifically reported, second-degree sunburn occurred in 3% (1 out of 38), 5% (5 out of 102) and 13% (3 out of 24) of patients. However, the timing of adverse events resulting from skin photosensitivity following administration of the photosensitiser was not always recorded. For more details, see the overview.

2.4.4 The Specialist Advisers stated that adverse events may include death, photosensitivity, strictures, acute neuropathy, chest pain, low-grade fever, oesophageal or lung perforation, nausea, atrial fibrillation, congestive heart failure, skin reaction, recurrence/progression of cancer, pleural effusion, hypotension, pneumonia, oesophagitis and haemorrhage.

2.5 Other comments

2.5.1 It was noted that different photosensitising agents may have different safety and efficacy profiles.

3 Further information

3.1 This guidance requires that clinicians undertaking the procedure make special arrangements for audit. NICE has identified relevant audit criteria and developed an audit tool (which is for use at local discretion).

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the overview.

Information for patients

NICE has produced information for the public on this procedure. It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.