Vaccination metastasis following percutaneous endoscopic gastrostomy

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INTRODUCTION

Percutaneous endoscopic gastrostomy (PEG) is increasingly preferred for provision of enteral nutrition, particularly in patients with head and neck cancer and those disabled by neurological swallowing disorders. It is a technically simple procedure that is well tolerated with low incidence of morbidity (Larson et al, 1987). However, the clinician must be aware of the range of complications that can occur with PEG, e.g. wound infection, granuloma formation, dislodging and tube migration, aspiration pneumonia, visceral injury, peritonitis and ileus.

This article presents a case report which appears to be the first female patient with hypopharyngeal cancer as a vaccination metastasis tumour following PEG. This is also only the third such case with head and neck cancer reported in the British literature that has developed this less known but serious complication.

DISCUSSION

Since its development approximately 25 years ago, PEG has become widely used for establishing enteral nutrition (Gauderer et al, 1980). Studies have shown it to be an extremely valuable feeding route in patients with head and neck cancer owing to its simplicity and low incidence of procedure-related complications. Complications of PEG are infrequent with a mortality rate of 0–1% and morbidity rate of 3–13% (Larson et al, 1987; Gibson et al, 1992).

CASE REPORT

A 72-year-old woman presented in April 2001 with a history of progressive dysphagia to solids of 4 months' duration with associated weight loss. An initial gastroscopy was unsuccessful. Examination under anaesthetic by the ear, nose and throat surgeons revealed a fungating, posterior hypopharyngeal wall tumour extending to the lateral walls of both pyriform fossae and up to 22 cm of the cervical oesophagus distally (*Figure 1*). Histology of the lesion showed it to be a squamous cell carcinoma. Computed tomography of the neck showed bilateral involvement of level 3 and 4 cervical lymph nodes and the tumour was staged as T4 N2. A decision was made to treat the patient with chemoradiotherapy because the tumour was large and exophytic.

On May 1 2001, a Freka® (Fresenius Kabi, Hamburg, Germany) percutaneous endoscopic gastrostomy (PEG) tube was placed under anaesthetic, using the pull (Ponsky-Gauderer) technique, for feeding purposes before the planned oncological management.

Between May and December 2001, the patient underwent a course of chemoradiotherapy. This period was complicated by neutropenic sepsis, mucositis, confusional state and peripheral neuropathy (secondary to cisplatin therapy), but responded to conservative management. A computed tomography scan of the head excluded cerebral metastases.

Follow up in January 2002 showed complete clearance of the hypopharyngeal tumour and hence a decision was made to wean her off the PEG feeding and encourage an oral diet. At the time of removal of PEG tube in April 2002, nearly a year after insertion, the PEG site appeared to show an overproliferation of granulation tissue (*Figure 2*). This was surgically debrided, and histology showed this to be a well-differentiated keratinizing squamous cell carcinoma (*Figure 3*) identical to the primary hypopharyngeal lesion, raising the possibility of tumour implantation secondary to the pull technique used for PEG tube insertion. Gastroscopy confirmed tumour infiltration (*Figure 4*) into the lumen of stomach, and biopsy of this also proved to be of squamous cell carcinoma.

Further staging investigations revealed the advanced nature of the tumour with liver metastases and hence she was referred for palliative radiotherapy. Radiotherapy alleviated the malodour from the tumour and also bleeding and overproliferation. She died peacefully in October 2002, about 6 months after the diagnosis of the stomal site cancer.

Following an extensive search of the literature, it appears that metastatic implantation of squamous cell carcinoma occurs infrequently at the gastrostomy site in patients with locally advanced head and neck cancer where the pull technique of PEG was used for feeding. In 1987, a large autopsy study reported gastric metastases to be extremely rare in patients with head

Figure 1. Endoscopy showing hypopharyngeal lesion.

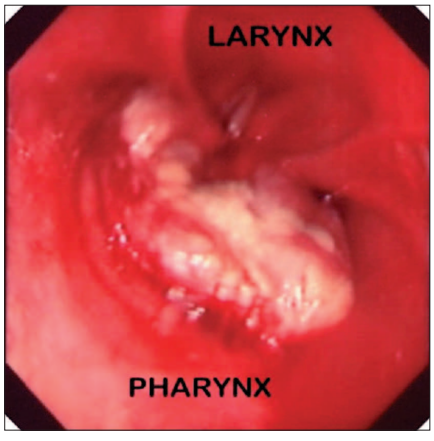

Figure 2. Vaccination metastasis at percutaneous endoscopic gastrostomy site.

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and neck cancer with a prevalence of 1.3% (Kotwall et al, 1987).

To best of the authors' knowledge, only seven of the reported thirty cases (listed on www.hospitalmedicine.co.uk) have developed this condition after regression of their primary neoplasm. From the literature, 72% of the reported cases were of stage IV disease and 21% were of stage III disease. Therefore, it appears the more aggressive the tumour (stage III and IV), the higher is the risk of seeding metastases as seen in this case. Mean interval between PEG placement and stomal recurrence is about 7 months (range 2–24 months).

Various theories have been postulated in the literature about the likely mechanism of spread to the percutaneous gastrostomy sites, about which controversy still exists. These include haematogenous or lymphatic spread, desquamation of malignant cells with subsequent implantation or possibly iatrogenic implantation by direct seeding (Sharma et al, 1994).

In this case, seeding of the tumour as a result of the pull technique seems a logical explanation and supports the view of direct implantation or vaccination at the time of PEG insertion (Deitel et al, 1988; Nishizaki et al, 1990), although haematogenous spread cannot be wholly excluded as there was a long latent period (12 months) before appearance of the metastatic tumour at the gastrostomy site.

Experimental studies have shown that a possible method for preventing tumour recurrence in a surgical wound is use of inhibitors of tumour cell adherence to the substrate cells alone or in combination with biological modifiers of free tumour cells at the time of surgery (Whalen and Ingber, 1989). Some authors have suggested the option of a push technique of PEG in patients with head and neck cancer to avoid the potential vaccination metastasis and to date this complication has not been reported to be associated with this technique. Other alternatives suggested in previous reports include nasogastric feeding, use of sialistic sheath or overtube, surgical gauze, plastic covering, fluoroscopy- or computed tomography-guided procedure, Stamm gastrostomy (a type of open gastrostomy) and laparoscopic gastrostomy.

PEG is a well-established technique in patients with head and neck cancer. However, the remote occurrence of this complication should not stop the clinician using PEG in this vulnerable group as most other surgically-placed gastrostomies carry a higher percentage of risks and extended hospitalization (Stern, 1986). Therefore it would seem prudent to carefully assess the extent of the tumour and attempt to minimize the risk of implantation.

A short course of preoperative radiotherapy has been shown to reduce the risk of tracheostomy site recurrence in head and neck cancer patients (Breneman et al, 1988). Similarly, a short course of radiotherapy either to the primary tumour or/and to the gastrostomy site before the PEG insertion could be considered. The use of laparoscopic gastrostomy (Lydiatt et al, 1996; Peitgen et al, 1997) is also recommended in patients with advanced head and neck cancer as an alternative to PEG, in view of its relative safety and effectiveness, and the lower chance of this rare complication.

Figure 3. Histology of the stomal site tumour showing keratinizing squamous cell carcinoma.

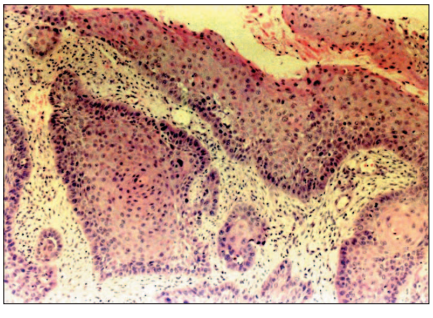

Figure 4. Gastroscopy confirming tumour involvement of gastric lumen. PEG = percutaneous endoscopic gastrostomy.

CONCLUSION

Vaccination metastasis is an unusual but a potentially life-threatening complication following the pull technique of PEG. This case illustrates that this rare clinical entity should be borne in mind while considering feeding options for patients with head and neck malignancy.

Clinicians should consider other options, which may be laparoscopic gastrostomy or possibly a short course of radiotherapy to the primary or the gastrostomy site before insertion, to lessen the likelihood of developing this complication. HM

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