service. One said that warts "can lead to children being banned from swimming baths, failing to learn to swim, and ultimately drowning. They can lead to loss of employment in food handlers." One consultant, however, stated that "for the past seven or eight years we have refused to see patients with viral warts unless there are exceptional circumstances." One said that he responded to referrals by sending the general practitioner a description of his recommended treatment for warts with a letter asking if the referral was still necessary.

Although many consultants thought that freedom to refer was fundamental to the relationship between general practitioners and consultants in the NHS, one commented, "I should be as free to reject patients with warts as the general practitioner is free to refer them." Some dermatologists commented that lack of dermatological resources made referrals for warts inappropriate. One consultant said that he had a 12 month waiting list, comprising 10 000 patients in the region waiting to see a dermatologist.

Comment

Our results show greatly diverging views among dermatologists about managing warts. Although the design of the questionnaire was perhaps oversimplistic and could have encouraged polarised views, the comments and additional letters clearly showed a spread of views. The results emphasise that the process of setting standards for referral is not simple and is unlikely to be solved by applying simplistic or arbitrary rules.

A point not specifically covered by our survey but suggested by some of our respondents was that attitudes towards referral may depend on local resources. Refer-

Responses of consultant dermatologists about appropriateness of hospital based service for treating warts

Statement	No agreeing (n = 144)*
A hospital based wart service is:	
Entirely appropriate	15
Appropriate	42
Not sure	1
Inappropriate	54
Entirely inappropriate	9

*23 Did not complete this question.

rals considered appropriate in one district might be considered inappropriate in another district with fewer dermatologists. An association between referral rates and the availability of consultant dermatologists has been reported.²

Where does this leave general practitioners? On the question of warts they could get different messages from local consultants depending on their views about managing this problem. We do not want to imply that clinical standards for referral will necessarily be set by specialists. Effective performance review in hospital referrals is likely to take place only when there is a dialogue between consultants and local general practitioners. Guidelines for referral would require careful and detailed discussion between these groups, with regular revision depending on clinical experience.

We thank the consultant dermatologists who took part in this survey, especially those who took the trouble to write at length about their views.

1 Keefe M, Dick DC. Dermatologists should not be concerned in routine treatment of warts. *Br Med J* 1988;296:177-9.

2 Roland MO, Morris RW. Are referrals by general practitioners influenced by the availability of consultants? *Br Med J* 1988;297:599-600.

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Interstitial laser photocoagulation for treating bleeding gastric cancer

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Managing bleeding from a gastric cancer may be difficult if the tumour is inoperable or the patient unfit for surgery. Laser treatment is useful for the palliation of oesophageal and gastric cancers causing dysphagia.¹ In standard endoscopic laser treatment the laser is used at high power (50-80 watts) in 1 second pulses to vaporise and coagulate the surface of the tumour. It is possible to coagulate the surface of small tumours to arrest haemorrhage, but it is difficult to treat large, friable, bleeding cancers.² Three patients who were not responding to standard laser treatment to control major blood loss from gastric cancers were treated with a new technique of low power interstitial laser photocoagulation.

Patients, methods, and results

Three patients (1 man, 2 women) with adenocarcinoma of the stomach were receiving standard high power laser treatment in an attempt to decrease the blood loss from their tumours. Surgery was inappropriate in two patients because of advanced age (91, 84) and general frailty. One patient (age 79) had hepatic metastasis and had only a short time to live. Despite twice weekly laser treatment,¹ the patients' transfusion requirements were not decreasing. A neodymium yttrium aluminium garnet laser with low

power facility (Surgical Laser Technologies, Keighley) was used to treat these patients on two consecutive weeks with low power interstitial laser photocoagulation. A sharp pointed artificial sapphire probe was coupled to the end of the laser fibre to prevent charring and allow light and heat penetration into the tumour. At endoscopy under sedation with intravenous midazolam (5-7.5 mg) the laser fibre was passed down the instrumentation channel of a standard gastroscope. The sapphire was inserted deep into the centre of the tumour and the laser power set to deliver 1-5 watts for 200-1000 seconds (100 joules of energy). The patient felt no discomfort during the procedure, and there was no immediate visible effect on the tumour. The sapphire was withdrawn and inserted at several points deep within the tumour and the same light exposure used.

Follow up endoscopy and laser therapy were performed one week later by which time the tumour bulk had reduced dramatically in all the three patients. They were re-examined each month until death. The patients' transfusion requirements are shown in the table. One patient survived for three weeks and maintained his haemoglobin concentration until death. The two other patients survived 28 and 32 weeks, and one maintained her haemoglobin concentration until

Transfusion requirements (units of blood) of three patients during treatment with standard endoscopic laser treatment (weeks 0-12) and then after interstitial laser photocoagulation (in week 13)

Week No:	0	2	4	6	8	10	12	13	17	32	42	46
Case 1				6	5		8	IT				Died
Case 2		5		5		3	4	IT	Died			
Case 3			2				6	IT		2		Died

IT = interstitial laser treatment.

death. The other patient required a further two units of blood 18 weeks after interstitial laser treatment. None of the patients received further laser treatment.

Comment

There are three major problems in the endoscopic laser treatment of bleeding gastric cancer. Firstly, the tumour is often large, making coagulation of the entire surface impossible. Secondly, tumours may protrude into the lumen, making access to the distal surface of the lesion impossible. Finally, blood and clot in the stomach obscure the view. The possibility of using the laser at low power for long exposure times with the fibre inserted directly into a tumour was first suggested as a method of destroying solid tumours in 1983,¹ and this technique is being developed for the percutaneous treatment of solid liver and pancreatic cancers.⁴ Initial

studies using this technique on normal liver tissue have shown that vessels can be permanently occluded and predictable tissue necrosis produced.¹ There were no complications, although excessive treatment might produce perforation. This initial study shows that the clinical effect of interstitial laser photocoagulation on the bulk of the tumour is dramatic and that bleeding can be stopped.

- 1 Krasner N, Barr H, Skidmore C, Morris AI. Palliative laser therapy for malignant dysphagia. *Gut* 1987;28:792-8.
- 2 Barr H, Krasner N. Is it possible to control bleeding from gastro-oesophageal cancer using endoscopic laser therapy? *Gut* 1988;29:A729.
- 3 Bown SG. Phototherapy for tumours. *World J Surg* 1983;7:700-9.
- 4 Steger AC, Barr H, Hawes R, Bown SG, Clark CG. Experimental studies on interstitial hyperthermia for treating pancreatic cancer. *Gut* 1987;28:A1382.
- 5 Matthewson K, Coleridge-Smith PD, O'Sullivan JP, Northfield TC, Bown SG. Biological effects of intrahepatic Nd: YAG laser photocoagulation in rats. *Gastroenterology* 1987;93:550-7.

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Mumps, measles, and rubella vaccination and encephalitis

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We report a case of encephalitis in a young child 27 days after immunisation with mumps, measles, and rubella vaccine. Mumps meningitis in a 14 year old girl 26 days after immunisation has been previously reported.¹ With the introduction of the vaccine in Somerset, Fife, and north Hertfordshire in April 1987 evidence for neurological symptoms occurring up to 21 days after immunisation was sought.² The vaccine was introduced in the rest of Britain in October 1988.

Case report

A 14 month old girl was admitted locally in November 1988 with a 24 hour history of fever and vomiting and a single generalised convulsion. She was conscious and had a fever (39°C). Shortly afterwards she went into status epilepticus and required sedation, paralysis, and ventilation. She was transferred to us for further management. Her seizures, measured by monitoring of cerebral function in the intensive treatment unit, continued for a further two hours despite heavy sedation. She required artificial ventilation for four days. Her recovery was slow and characterised by irritability, odd behaviour, and central visual field loss. There was no evidence of retinitis or other fundal changes, and visual evoked responses remained normal. She was discharged 28 days after admission, still with odd behaviour and visual impairment. After four

months she was well with no apparent neurological effects.

She had never been ill before. There was no family history of epilepsy or febrile convulsions. BCG had been given at birth and triple vaccine and oral polio vaccine at the usual time without adverse effects. She had received mumps, measles, and rubella vaccine containing mumps virus Urabe Am 9 strain 27 days before admission. Lumbar puncture was performed on three occasions. The table shows the results of biochemical investigations. An electroencephalogram suggested encephalitis, and computed tomography of the brain yielded results consistent with meningo-encephalitis.

Comment

Although we could not isolate mumps virus in this patient, we found a fourfold rise in the S antibody titre to mumps virus by complement fixation while she had encephalitis, suggesting a temporal relation between the vaccination and the symptoms. Attenuation of the mumps virus may prolong its usual incubation period.

With the introduction of a nationwide mumps, measles, and rubella vaccination programme in Finland it was claimed that "no case of encephalitis associated with these microbes has been found, nor have there been any clinical cases of these infections or the respective antibody findings."³ In the United States too "no neurological complications have been attributed to mumps immunization."⁴ In both these reports, however, the time interval between the observation of neurological symptoms and immunisation was not stated.

We are aware of three unpublished reports of mumps meningoencephalitis temporally associated with mumps, measles, and rubella vaccine in the United Kingdom (Smith Kline and French, personal communication). The calculated rate of encephalitis may be as high as one per 100 000 vaccinations.¹ There is evidence, however, that the incidence of natural mumps encephalitis has fallen overall in those countries that have universally introduced the vaccine.⁵ Our case suggests that at least 30 days' follow up is needed to exclude a possible neurological complication of the vaccination.

- 1 Champaghe S, Thomas E. A case of mumps meningitis: a post-immunization complication? *Canada Diseases Weekly Report* 1987;13:155-7.
- 2 Miller C, Miller E, Rowe K, Bowie C, Judd M, Walker D. Surveillance of symptoms following MMR vaccine in children. *Practitioner* 1989;223:69-73.
- 3 Koskieniemi M, Vaheri A. Effects of measles, mumps, rubella vaccinations on pattern of encephalitis in children. *Lancet* 1989;i:31-4.
- 4 Fenichel GM. Neurological complication of immunization. *Ann Neurol* 1982;12:119-28.
- 5 Hayden G, Preblud S, Orenstein W, Conrad J. Current status of mumps and mumps vaccine in the United States. *Pediatrics* 1978;62:965-9.

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Results of biochemical tests carried out on girl aged 14 months with encephalitis after mumps, measles, and rubella vaccination

Measurement	Results
Cerebrospinal fluid:	
White cells	6 × 10 ⁶ /l*
Protein	0.4 mg/l
Glucose	3.3 mmol/l†
Bacterial cultures:	
Blood	Negative
Cerebrospinal fluid	Negative
Virological cultures:	
Cerebrospinal fluid	Negative
Throat	Negative
Urine	Negative
Faeces	Negative
Serological testing:	
Mumps S	4-Fold rise in antibody titre
Measles	Raised antibody titre
Rubella IgM	Raised antibody titre

*Predominantly lymphocytes.

†0.61 Of plasma glucose value.