Malignancy of the head and neck is often associated with severe pain. This probably relates to the embryological concentration of sense organs at the head end - that with which the animal confronts his environment. Radical resection, with reconstruction, is sometimes the primary treatment and often also proves effective in relieving pain. However, more commonly treatment consists of histological verification by biopsy followed by radiotherapy. There is no doubt that radiotherapy can relieve pain, but the likelihood of recurrence after such treatment is high and this is usually recognized by the return of the original pain.

With the realization that pain due to recurrence of malignancy in the head and neck is not easy to relieve, it is becoming recognized that secondary or 'salvage' surgery, although not necessarily curative, may be the most appropriate and effective way of relieving the pain (Miles, 1984). Malignancy of the head and neck, particularly when recurrent, extends beyond the specialized boundaries of otorhinolaryngology, ophthalmology, dentistry and neurosurgery, and 'salvage' surgery may be more effective if undertaken by specialist surgeons, in combination.

In recommending such surgery there may be a fine balance between pain relief, with perhaps improved survival, and the possible mutilation and psychological insult of further and massive surgery. If the latter is deemed excessive or the tumour physically unresectable, then treatment should become empiric, directed at the symptomatic relief of pain.

Surgical resection

Basal or squamous cell carcinoma of the scalp

Such cancers are usually not painful until they have invaded the underlying bone and even then the penetration usually has to be complete and to involve the dura for the symptoms to become severe. Radiology may indicate invasion of the bone but will not accurately quantify the extent. Even computerized tomographic (CT) scanning, while more accurately defining whether total bone thickness invasion has occurred, will not easily delineate the extent and degree of infiltration of the dura mater. The only safe way to manage such a situation is to anticipate dural involvement, being prepared for wide dural resection and grafting. The presence of a neurosurgeon at such a procedure would seem advisable, especially if the bone overlies treacherous intracranial structures such as venous sinuses. The dura may be reconstructed with pericranium, usually readily available when large areas of scalp are being mobilized to compensate for the resected tumour, or by lyophilized homologous cadaveric dura.

Cancers of the paranasal sinuses

These cancers are almost always painful and highly malignant. Although some illustrate major sensitivity to radiotherapy by shrinkage (and relief of pain), block resection
is usually considered advisable particularly when the response to radiotherapy has been limited or there is frank evidence of recurrence. Computerized tomographic scanning will illustrate substantial intracranial extension, as notoriously occurs with adenoid cystic carcinoma, and the much less common neuroblastoma, but then only if the radiologist is aware of the need to attenuate the pictures for intracranial tissue as well as bone. Iodine enhancement is also extremely valuable in delineating intracranial tumour from brain tissue. If scanning illustrates the cancer extending up to the base of skull, one must expect involvement of the bone, the need for resection of involved bone and the possibility of needing to resect the dura.

If there is evidence of intracranial spread then the lateral rhinotomy incision is easily extended superiorly in a curvilinear manner to allow an appropriate frontal craniotomy. Following resection of all the visible tumour the dura can be repaired by an on-lay graft of pericranium or lyophilized dura. It is sufficient merely to lay down the graft without stitching, covering it with a haemostatic sheet and allow the brain to descend on it. If the base of skull resection is sufficiently large to suggest the need for supporting this graft, then strips of the outer table of the skull are easily resected and used to bridge the gap below the dura and its on-lay graft.

If there is minimal or no intracranial extension then it is possible to resect the affected bone and the involved dura using the lateral rhinotomy approach and to repair the dural defect, from below, by an underlay lyophilized dural graft. The graft is made sufficiently larger than the defect to tuck in peripherally between the normal dura and the skull base. The cavity is then packed in a routine manner.

Less commonly, more benign tumours such as fibroma, meningioma and chordoma involve the same areas and provoke pain, and are best treated by the same combined surgical block resection. Sometimes the extent of the tumour makes it more appropriately treated by two-stage procedures.

Cancers of the middle and external ear

Again, biopsy followed by radiotherapy is the usual primary treatment for these tumours and rarely radical petrosectomy. Severe pain is invariable and recurrence is common. If the tumour appears limited to a resectable area and, in practice, this means lateral to the carotid canal and foramen ovale, then early radical petrosectomy should be considered.

Computerized tomographic scanning is essential, as the deeper tumours can easily extend intracranially, and again the emphasis must be made that the attenuation of the CT scanner for intracranial extension must be that for intracranial contents and not simply bone. The author has encountered, at surgery, an intracranial abscess extending up from the diseased petrous that had not been delineated by scanning with attenuation only for bony tissues. The general condition of the patient and the natural history of the tumour growth must be taken into consideration in deciding on such radical surgery. The practical and cosmetic defects of resecting the ear, and manipulation of the scalp or musculocutaneous flaps, must be explained together with the risks to lower cranial nerves, some of which, such as the seventh nerve, will already have been affected. Despite the substantial nature of this procedure, worthwhile results have been seen particularly regarding pain relief (Stell and Miles, 1986). There was even an
improved survival when the cancer arose from the external ear but not when its origin was in the middle ear.

The technical details of petrosectomy are described in Volume 3, Chapter 22.

Cancers of the mouth

Recurrent cancers of the tongue and floor of the mouth can equally prove amenable to major resection of most of the tongue and all of the mandible, with reconstruction by musculocutaneous flaps. The particularly distressing pain of recurrent carcinoma of the base of the tongue is often well palliated by this procedure.

Malignancy of the cervical spine

Metastatic cancers are much more common than primary bone tumours in the cervical spine. As with all bone tumours a background constant pain, particularly at night, and probably relating to expansion of the bone with periosteal stretching, can occur. However, in the cervical spine, easily the most mobile part of the skeletal spine, movement related pain, and pain on weight-bearing, are a particular feature and relate to instability. Often the nerve roots are compressed by the collapsing vertebral bodies and radiating pain results. Instability can be recognized from the patient’s complaint and is often verified radiographically. Treatment must be directed to establishing stabilization. While radiotherapy can undoubtedly relieve the constant periosteal bone pain it can achieve little when instability is the problem and can possibly aggravate the situation.

Simple measures such as the use of a collar are likely to be of help only when a patient has constant pain with slight weight-bearing aggravation. When the instability is more florid, even the substantial hard collars with breast plate support are rarely effective. The option of skull fixation by halo, with pillars to a chest cast, is seen by most patients as incompatible with an acceptable quality of life.

As most metastatic cancers occur in the vertebral bodies rather than the rest of the vertebrae (Kakulas et al, 1980), and as the main weight-bearing is through the vertebral bodies, then surgical stabilizing procedures are best directed at the diseased vertebral body. In the cervical spine, the anterior approach to the vertebral bodies, as used for cervical disc resection, is familiar to neurosurgeons. The resected vertebral body can be replaced by a bone graft or by a synthetic prosthesis with or without internal fixation. When the vertebral bodies involved by malignancy are considered too extensive to be resected, then a posterior approach will allow internal fixation by rods or wires and alleviate the symptoms. This procedure is, however, less efficient and more painful than the anterior approach.

Empiric treatment of the pain

Medical treatment

Medical treatment, where it is effective and not associated with intolerable side-effects, is clearly always preferred to surgical manoeuvres. Simple analgesics, particularly anti-inflammatory preparations, either non-steroidal or steroidal, have a part to play especially
when bone is involved. Narcotic medication, being more effective in the sense of a stronger analgesic, and being less of a concern from the abuse standpoint in patients with malignancy and limited life expectancy, is likely to be introduced into the treatment early.

The major recent interest in the management of terminal states, and the development of the hospice movement, has illustrated both the efficiency and appropriateness of regular and adequate morphine administration for pain associated with malignancy (Twycross, 1985). The very common association of nausea and the obligatory association of constipation with such treatment does mean there is a need for prophylactic antiemetic and laxative medication. Still, some people cannot tolerate these side-effects and/or complain bitterly of a 'drugged' mental state associated with high morphine medication.

Recognition of the specific receptors for opiates in brain and spinal cord have led to attempts to achieve morphine analgesia, while minimizing side-effects, by delivering the morphine directly to the central nervous system. Extradural (epidural), and intrathecal, spinal morphine application does relieve pain using very small doses (Wang, Nauss and Thomas, 1979). Implantable delivery systems for chronic administration of morphine have been developed, some simple one-shot percutaneous injection systems and some more complicated multiple dose and powered systems, although the latter appear to be prohibitively expensive (Poletti et al, 1981). Unfortunately these systems still have a risk of respiratory depression and those applied to the cervical spine would seem more vulnerable in this respect.

Morphine administered into the ventricles of the brain is perhaps even more effective as an analgesic. Using dosages of less than 1 mg analgesia can often last days after a single injection. In suitable cases this method of administration can prove effective, although training is clearly required and optimally a member of the family performs the percutaneous puncture of the scalp reservoir rather than leaving the administration to visiting nurses. This method of application is effective for pain due to malignancy anywhere in the body, but is perhaps more appropriate to that involving the head and neck where other options are limited (Lenzi et al, 1985). With the undoubted risk of catastrophic ventricular infection almost certainly correlating with the number of percutaneous punctures of the reservoir, this technique would seem justifiable only when life expectation is limited to weeks or at the most months.

**Destructive procedures to the nervous system**

**Peripheral nerve destruction**

Structures of the head and neck are innervated by the trigeminal nerve, the glossopharyngeal nerve, the vagus nerve and the upper four cervical nerves. The trigeminal nerve supplies a great area of skin on the face and scalp, the linings of the mouth and anterior tongue, and also the dura of the anterior and middle fossae. Peripheral nerve destruction is a quick method of denervating and relieving pain but unfortunately, in the head and neck, the malignancy tends to extend beyond the confines of a single nerve and it is therefore relatively rarely possible to provide enough pain relief by a single nerve destruction.

Trigeminal denervation is best achieved by the percutaneous cannulation of the foramen ovale when the ganglion or the sensory root can be destroyed by alcohol, phenol injection or, more commonly of late, by radiofrequency coagulation. As long as the foramen
ovale is radiographically definable this procedure can be undertaken, even in the presence of extensive tumours.

Glossopharyngeal nerve destruction is necessary when a malignancy involves the base of the tongue, the tonsillar region, eustachian tube and the middle ear and can also be achieved percutaneously by radiofrequency coagulation (Broggi and Siegfried, 1979). The medial neural notch of the jugular foramen needs to be radiographically defined and even then it is by no means certain that an effective nerve destruction will be achieved, but certainly it is worth trying. It is quite possible that coagulation in this region will also achieve some destruction of the upper vagus nerve fibers, which is desirable when one recognizes that the tenth nerve may also be involved in the innervation of the tumour area.

It is possible to undertake a surgical peripheral neurotomy by a posterior fossa approach and at one sitting to section the trigeminal nerve, the glossopharyngeal nerve and the upper vagus nerve fibres, and modern microsurgical technique makes this a relatively simple and safe procedure. Personal training and expertise would seem to determine whether a surgical or a percutaneous radiofrequency is used.

In the past, surgical division of the upper cervical sensory roots has also been undertaken but this procedure is very painful and current practice would suggest that percutaneous phenol neurolysis is to be preferred.

**Trigeminal sensory nucleus and tract destruction**

That part of the trigeminal nucleus and tract that descends to the second cervical level in the spinal cord predominantly subserves the sensation of pain. Therefore, destruction of these structures would provide in the head an equivalent of anterolateral cordotomy in the rest of the body, namely ipsilateral pain relief with loss of pinprick and temperature sensation but retention of other sensory modalities. This highly desirable ambition has not proved easily attainable in practice with, in particular, a distressingly high incidence of complications in the form of dysaesthetic sensations.

More recently, a technique involving undercutting of the dorsal root entry zones on the spinal cord is being applied to head and neck pains, the line of destruction being conducted from C3 up to the obex on the medulla. It remains to be seen whether this will prove superior to previous techniques.

**Thalamotomy**

Destruction of the medial thalamic sensory nuclei (central median and intralaminar) in many ways provides the most satisfactory form of pain relief, that is, immediate clearance of pain without recognizable sensory loss or psychological change. It is thought that the polysynaptic high threshold pathways subserving pathological pain pass to the medial thalamus, while the pathways subserving general sensation relay in the ventrolateral nucleus before proceeding to the sensory cortex. Unfortunately, in order to achieve accurate focal destruction of these nuclei a complex technique of stereotaxic surgery is necessary, involving fixation of a metal frame to the patient's head. The procedure has to be undertaken under local anaesthetic in order to ensure against adverse effects involving mistargeting and in order to
achieve sufficient destruction gradually, by incremental techniques, without excessive destruction resulting in morbidity. This technique, therefore, undoubtedly frightens patients. The resultant pain relief also tends to be limited in time and while one might expect, with surety, 3-6 months effect, to achieve more than one year is uncommon. However, the median survival of these patients is 10 weeks so that the use of such a technique is definitely appropriate.

Recent improvements in the basic stereotaxic technique with the use of computer aids in theatre, and even more the incorporation of CT scanning targeting, must lead to a justifiable resurgence in the practice of stereotaxic thalamotomy for cancer pain. Again, while this technique can be effective for pain at any level on the opposite side of the body, anterolateral cordotomy of the spinal cord would seem more appropriate for anything below the neck, while thalamotomy would appear to be more appropriate, and therefore reserved, for contralateral cancer pain of the head and neck (Spiegel and Wycis, 1966).

**Pituitary destruction**

Pituitary destruction by craniotomy was first practised by Luft and Olivecrona in 1952, in an attempt to suppress cancer growth (and pain) in tumours thought to be sensitive to gonadotrophins. Even then, it was clear that the pain relief and tumour regression were not achieved equally and also that on some occasions the pain relief was immediate. Increasingly, less threatening means were devised for destroying the pituitary gland, many using a percutaneous trans-sphenoidal approach (Miles, 1985). Moricca (1974) popularized a technique apparently first described by Greco, Sbaragni and Cammili (1957) by which, simply injecting alcohol into the pituitary gland suppressed some tumour growth and greatly relieved pain. This technique has been widely practised and the results described (Lipton et al, 1978). It has been possible to relieve pain in around 75% of cases and in over 40% the pain relief was total. Unfortunately, the duration of pain relief tends to be limited to weeks or months although periods extending over a year have been recorded. The technique is not without risk (Lipton et al, 1978). Although it is known that injury to the hypothalamus can occur due to spread of the alcohol up to the pituitary stalk and even that electrical stimulation of the pituitary gland itself can provide short-term relief of pain (Yanagida et al, 1984), a convincing explanation is still wanting (Miles, 1985).

Pituitary destruction can undoubtedly provide pain relief in patients unresponsive to other techniques so it would seem justifiable to continue its use. As we have no evidence to suggest that any one technique is better than another, then there would seem every reason to use that which is associated with least morbidity. At present that technique is probably radiofrequency coagulation by the trans-sphenoidal approach.

Among the patients treated in the Centre for Pain Relief, Liverpool, eight have had pain due to malignancy of the head or neck and their responsiveness to this technique has been the same as that with malignant pain elsewhere. Four patients had total relief of pain, two partial and two no pain relief. Again the pain relief tended to last only months.
Electrical stimulation of the brain

Studies into electro-anaesthesia showed that when the deep central grey areas surrounding the third ventricle (paraventricular grey) and the midbrain aqueduct (periaqueductal grey) were stimulated electrically in animals a state of surgical anaesthesia could be induced (Reynolds, 1969). Using the technological achievements of cardiac pacemaking and dorsal column spinal stimulation, chronic deep brain stimulation was achieved using implants activated from an external transmitter (Richardson and Akil, 1979). This technique has been used for non-malignant and malignant persistent pain and certainly has proved effective in a proportion of each. Stimulating these deep brain structures usually provokes no sensation, but within 30 minutes pain is gradually relieved, particularly when contralateral, but bilateral lower body pain can be relieved from unilateral stimulation (Richardson, 1979).

The implantation requires stereotaxic techniques with the unpleasantness previously described, a period of trial stimulation by a wire exiting from the scalp and, if the trial proves effective, a second operation, requiring general anaesthetic, for conversion of the percutaneous stage to that of a permanent implantation. The patient then induces activity in the implant by the local application of a transmitter to a buried receiver and the pain relief can last hours before further treatment is required.

The effect is probably mediated through the release of endogenous analgesics (Hosobuchi, 1980) and as such there is a tendency for the development of tolerance. The technique as a whole is somewhat complicated for the average debilitated patient with advanced cancer. Meyerson, Boethius and Carlsson (1979) have used the percutaneous stage as a permanent means which obviates some of the complications and certainly some of the expense, as each complete stimulator set currently costs £3000.

In many ways the repeated need to stimulate is a constant reminder that the cause for the pain persists and this suggests that deep brain stimulation is less suitable for the patient with advanced cancer than an ablative technique, if that can be achieved expeditiously and if it can be made to last.

Conclusion

Throughout the world pain clinics have proliferated resulting in efficient and prompt pain relief in many instances. Knowledge, methods and techniques have rapidly increased with the interest in pain and much more is therefore available for patients whose pain relates to malignancy in the head and neck. There is still a need to remember the virtues of surgical resection in relieving some pains and an ever increasing need and responsibility for communication between the specialists dealing with malignancy in this complex area.
Chemotherapy in terminal head and neck cancer

Randall P. Morton and E. B. Dorman

The general comments in this section will relate mainly to squamous carcinomata which comprise the great majority of head and neck cancers. Other epithelial tumours (adenocarcinoma, salivary gland cancer, mucosal melanoma) are less common, with a different pathogenesis and clinical behaviour pattern. Therefore these tumours will be considered separately.

Lymphomata and sarcomata comprise two other special groups for which chemotherapy has a particular role and it is not appropriate to discuss them further here.

Patients eligible for palliation will have advanced primary or recurrent disease which is deemed unsuitable for curative therapy, that is by radical radiotherapy or surgery. Recurrence may be at the site of the previously treated primary, in the regional nodes, or in distant organs, usually lung, liver or bone.

The aim of palliation and how palliative chemotherapy may be used in head and neck cancer patients will be discussed below.

Palliative chemotherapy: general principles

Palliation aims to improve the patient's quality of life without expecting to cure the disease. This is achieved by suppressing symptoms, but not necessarily prolonging survival in the process. However, since most of the major symptoms are due to the presence of tumour, effective palliation is only achieved by reduction of tumour size, which in turn is likely to prolong survival.

Clinical studies of chemotherapy are usually in the form of phase II or phase III trials. In a phase II study the end-point is the response of the tumour. A phase III trial is a much larger, controlled trial carried out to determine whether the activity of a drug noted in a phase II study can be confirmed, whether any new activity or adverse effects arise, and whether the drug has any effect on survival; the end-point is the death of the patient.

A favourable tumour response does not always equate to improved long-term survival. Three regimens were compared with a no treatment control group in the phase III trial. Median survival is extended by up to 63 days, depending on the regimen used. By 6 months a different pattern has emerged, with improved survival shown only in the single agent group, cisplatin (cisplatinum).

Quantitative assessment of tumour response is in fact often difficult, sometimes impossible, and always unreliable. Moreover, a tumour response does not necessarily equate with benefit to the patient. Survival time and morbidity are undoubtedly important for patients with a limited time to live, but increased survival may prolong, rather than relieve, the suffering, and treatment itself may cause side-effects without necessarily conferring any symptomatic relief.
The success of palliation in recurrent disease, as distinct from advanced primary disease, is especially difficult to assess because the quality of life in patients treated for head and neck cancer is usually compromised before any recurrence appears (Morton et al, 1985).

Patient profile and natural history

Patients are usually in a poor general and nutritional condition, with a performance status of less than 60 on the Karnofsky scale (Table 24.1). They are often dependent on alcohol and many have chronic lung disease. Impaired renal and liver function may preclude the use of some or all chemotherapeutic agents, or demand reduced dosages.

Table 24.1 Definition of performance status in patients with malignancy

**Karnofsky**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Normal; no complaints, no evidence of disease.</td>
</tr>
<tr>
<td>90</td>
<td>Normal activity; minor signs and symptoms of disease.</td>
</tr>
<tr>
<td>80</td>
<td>Normal activity with some effort; some signs and symptoms.</td>
</tr>
<tr>
<td>70</td>
<td>Cares for self; unable to carry out normal activity or work.</td>
</tr>
<tr>
<td>60</td>
<td>Requires occasional assistance; but able to care for most needs.</td>
</tr>
<tr>
<td>50</td>
<td>Requires considerable assistance and frequent medical care.</td>
</tr>
<tr>
<td>40</td>
<td>Disabled; special care and assistance needed.</td>
</tr>
<tr>
<td>30</td>
<td>Severely disabled.</td>
</tr>
<tr>
<td>20</td>
<td>Very sick; hospitalization needed; active supportive therapy necessary.</td>
</tr>
<tr>
<td>10</td>
<td>Moribund; fatal processes progressing rapidly.</td>
</tr>
<tr>
<td>0</td>
<td>Death.</td>
</tr>
</tbody>
</table>

**WHO/ECOG**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Able to carry out all normal activity without restriction.</td>
</tr>
<tr>
<td>1</td>
<td>Restricted in strenuous activity but ambulatory and able to do light work.</td>
</tr>
<tr>
<td>2</td>
<td>Ambulatory and able to self-care but unable to work; mobile for most of waking hours.</td>
</tr>
<tr>
<td>3</td>
<td>Limited self-care; confined to bed or chair for most of waking hours.</td>
</tr>
<tr>
<td>4</td>
<td>Completely disabled; unable to self-care; confined to bed.</td>
</tr>
</tbody>
</table>

If left untreated, patients with terminal head and neck cancer die in an exponential fashion, with a median survival time of about 3 months (Stell, Morton and Singh, 1983). Simple measures such as nasogastric feeding tubes and tracheostomies are frequently necessary to keep the patient comfortable without prolonging survival greatly.

Most patients require pain relief, and their quality of life can only be described as poor. The discomfort and difficulty with breathing, speaking and swallowing is often matched by the cosmetic deformity of previous surgery, or by the tumour itself. A high rate of depression, disability and discomfort has been reported in patients treated for head and neck cancer (Morton et al, 1984).
Dissemination of head and neck cancer is often present by the time of death, but relatively few patients die because of their distant metastases. Most deaths seem to be related to the effects of recurrent or residual disease in the head and neck. Despite the poor quality of life, almost all patients wish to live as long as possible, but do not want to suffer pain or too much indignity. Chemotherapy is useful as an adjunct to the general care of terminal disease. It gives the patient a feeling that he is being purposefully managed, and his psyche will improve if he observes a tumour response. It is obviously not a palliation panacea.

Chemotherapy theory

See also Volume 1, Chapters 21 and 22.

Tumour cells are killed or attenuated by chemotherapy as a result of biochemical activity. The activity of a drug depends on its pharmacokinetic properties such as inactivation, binding to carrier protein, and excretion. The degree of 'response' that a tumour exhibits depends mainly on the growth fraction (the proportion of tumour cells actively engaged in cell replication). The proliferative phase of a cell cycle renders the cell especially vulnerable because biosynthesis of essential molecules is taking place.

Most of the cells that are not proliferating are 'resting', but retain the potential for replication. These resting cells are generally less vulnerable to chemotherapy.

Tumour destruction is though to follow first-order kinetics, in that a given treatment should kill a constant fraction of vulnerable cells, and not a fixed number. Most tumours follow a Gompertzian growth curve in which the growth fraction is large initially, but progressively decreases as the tumour increases in size. The tumour growth rate increases steadily to a maximum of 35-37% of total tumour volume, then progressively diminishes as the growth fraction continues to decrease. In other words, a large bulky tumour will have a relatively small proportion of tumour cells susceptible to chemotherapy.

Tumour sensitivity to the different chemotherapeutic agents varies. There are several drugs known to be active in head and neck cancer (Table 24.2). Attempts to identify tumours most likely to respond by measuring the proportion of cells in mitosis ('mitotic index'), or by radioactive labelling of those cells undergoing DNA synthesis ('labelling index'), have been generally inconsistent and unreliable.

Theoretically, the tumour mass should first be reduced (for example, by surgery), thereby increasing the growth fraction and rendering the tumour more susceptible to chemotherapy. Also, the combination of several chemotherapeutic agents should circumvent drug resistance through: (a) sequential blockade; (b) concurrent blockade; (c) complementary inhibition; (d) combination of individually active agents providing a more highly selective killing effect; or (e) kinetically based regimens (in which drugs are administered according to their activity in the various parts of the cell cycle). The kinetically based regimens have been popular in the past. They theoretically synchronize the cells entering a new cycle by arresting them in one phase using a phase-specific agent (for example, vincristine, which affects mitosis). Then, when most of the surviving cells are thought to be in the S phase, an S phase-specific agent, such as methotrexate, is given.
Table 24.2 Common chemotherapeutic agents in head and neck cancer, and the usual response rate reported when the single agent is used

<table>
<thead>
<tr>
<th>Agent</th>
<th>Type</th>
<th>Response rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisplatin</td>
<td>Random synthetic</td>
<td>25-60</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Antimetabolite</td>
<td>20-60</td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td>Alkylating agent</td>
<td>20-40</td>
</tr>
<tr>
<td>Epirubicin</td>
<td>Antibiotic</td>
<td>30</td>
</tr>
<tr>
<td>Bleomycin</td>
<td>Antibiotic</td>
<td>15-25</td>
</tr>
<tr>
<td>Dacarbazine</td>
<td>Random synthetic</td>
<td>20</td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>Antibiotic</td>
<td>15</td>
</tr>
<tr>
<td>5-Fluorouracil</td>
<td>Antimetabolite</td>
<td>15</td>
</tr>
<tr>
<td>Vincristine</td>
<td>Plant alkaloid</td>
<td>5</td>
</tr>
</tbody>
</table>

An approach to treatment

If the patient is not suffering from the presence or effect of the tumour, no active therapy need be given immediately. Instead, chemotherapy can be withheld and sample, relatively non-toxic and non-invasive measures may be sufficient. High-dose steroids provide a simple form of treatment which can palliate very effectively by causing euphoria, pain relief and reduction of oedema. Alternatively, cytotoxic chemotherapy can be considered if the patient specifically seeks treatment with a view to prolongation of survival, or if he is suffering from the effects of local invasion, and cannot be reasonably managed by medication, simple surgery or palliative radiotherapy.

The treatment will depend on the type of tumour and the patient's age, renal and hepatic function, haematological profile, and nutritional status. Combination chemotherapy can cause added toxicity.

Other forms of therapy include biological response modifiers such as BCG, levamisole/thymosin, and retinoids, but these are not commonly used in advanced disease. Indomethacin, a prostaglandin synthesis inhibitor, has been used alone in patients with advanced and metastatic disease and produced a response rate of 20% (Hirsch et al, 1983).

The patient must be warned about unwanted side-effects and the possibility that the treatment may be ineffective.

The assessment of benefit from chemotherapy for recurrent disease is very difficult, because of the compromised quality of life in patients who have been previously treated for head and neck cancer. It is hard to know how much discomfort is attributable to previous treatment and how much to recurrent tumour. It follows that antitumour therapy may be effective in reducing tumour size without materially improving the patient's 'quality of life'.

Survival time remains the most tangible method of assessing results; tumour response is impossible to quantify accurately, and 'quality of life' is an even more elusive parameter. A proper approach will take cognisance of all these factors, but the fact remains that for practical purposes effective palliation in terminal disease is an art (Shaw, 1985).
Contraindications to chemotherapy

Absolute contraindications are few and are generally very obvious. Chemotherapy must not be given if the patient is very frail or debilitated. If the patient is in renal, cardiac, or liver failure, or if there is severe myelosuppression, chemotherapy must be withheld until the problem is corrected. Relative contraindications refer to the likelihood of unacceptable side-effects, or failure of the treatment to provide benefit. Complications and side-effects are usually related to drug toxicity, and will be more severe if the excretion or inactivation of the agent is impaired. Table 24.3 details the major side-effects and the principal method of elimination of the active agent for the main drugs used in head and neck cancer.

Table 24.3 Major pharmacokinetic properties and toxic effects of the principal chemotherapeutic agents in head and neck cancer

<table>
<thead>
<tr>
<th>Agent</th>
<th>Metabolism</th>
<th>Dose-limiting toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisplatin</td>
<td>Protein bound; hepatic metabolism, renal excretion</td>
<td>Nephrotoxic</td>
</tr>
<tr>
<td>Methotrexate, 5-fluorouracil</td>
<td>95% protein bound; liver and enterohepatic circulation, renal excretion</td>
<td>Nephrotoxic, myelosuppression, mucositis</td>
</tr>
<tr>
<td>Bleomycin, doxorubicin, epirubicin</td>
<td>Conjugation in liver; mainly biliary excretion; some renal excretion</td>
<td>Pulmonary fibrosis, cardiomyopathy, mucositis</td>
</tr>
<tr>
<td>Cyclophosphamide, ifosfamide</td>
<td>Hepatic metabolism, renal excretion</td>
<td>Nephrotoxic, myelosuppression, urothelial damage.</td>
</tr>
</tbody>
</table>

Failure to provide benefit is difficult to predict. The factors known to be associated with prolongation of survival are age, performance status, lymph node status, tumour response and type of agent used (Morton et al, 1985).

If all aspects are considered together with the patient's wishes it is likely that very few patients with advanced stage disease will actually be submitted to any high dose single-agent or complicated multiple-agent regimen (Shaw, 1985).

Nutritional factors

Most head and neck cancer patients are noted to be very thin with a considerable amount of muscle wasting when they die. The weight loss may be due to:

1. decreased intake, either from anorexia or as a result of dysphagia;
2. decreased absorption of ingested food;
3. increased loss of nutrients, for example, from fistulae;
4. possible changes in resting metabolism and energy expenditure.
The anorexia can be caused by changes in taste and smell, increased production of lactate and ketones, tumour toxins, psychological factors related to the patient's perception of his disease, the effect of chemotherapy, and various non-specific manifestations of disease.

Tumour production of small peptides and other metabolites is thought to alter host enzyme function, disrupting normal metabolism of the patient. There is an increase in glucose/lactate metabolism (Cori cycle) and body protein turnover, with decreased muscle protein synthesis. Hypoalbuminaemia is a common finding and important because many chemotherapeutic agents are protein bound.

Clearly, then, the patient with advanced cancer has a compromised metabolic and nutritional state and has nutritional requirements that are different from the normal patient. Enteral nutritional support is often required, but parenteral or enteral hyperalimentation to improve the patient's nutritional status, although frequently given (Morton, 1984), is rarely justified in the authors' opinion.

**Treatment regimens**

**Squamous tumours**

Methotrexate and cisplatin are both effective as single agents in head and neck cancer, and both can be given in low-dose or high-dose regimens. Ifosfamide and 5-fluorouracil are two other agents which have recently been thought to be effective in combination with cisplatin or methotrexate. There is no evidence, however, that multiple agents confer any additional benefit over the use of the single most effective agent from the combination (see below). Despite this, multiple-agent regimens continue to be popular, the most frequently used being the kinetically based regimen of vincristine, bleomycin and methotrexate (VBM).

**Methotrexate**

Methotrexate for palliation is usually given every 2-3 weeks as an intravenous bolus of 40 mg/m² of body surface area. It can also be given orally as an outpatient regimen, for example, 50 mg/week.

**5-Fluorouracil**

Given intravenously, doses vary from 500 mg/week to 1000 mg/m² per 24 hours for 4 days every 4 weeks or so.

**Ifosfamide**

This agent is given at doses ranging from 1-2 g/m² per 24 hours intravenously over 3-5 days. It is always given with mesna 1-2 g/m² per 24 hours intravenously to protect the urothelium.
Cisplatin

Dose schedules for cisplatin vary between 20 mg/m² per 24 hours intravenously for 4-5 days and 120 mg/m² intravenously over about 8 hours. There are usually 4 weeks between treatments. Any regimen containing cisplatin should include appropriate pre- and posthydration, a high salt load (0.9% saline) and antiemetic medication.

Other

The combination of vincristine-doxorubicin (Adriamycin)-cyclophosphamide (VAC) has been used with success in two patients with recurrent nasopharyngeal carcinoma following radical radiotherapy (Haines et al, 1985). Both tumours were reportedly lymphoepitheliomata (not confirmed with electron microscopy or Epstein-Barr virus antibody titres). If this experience can be repeated by others it will be the first squamous carcinoma of the head and neck to be controlled by chemotherapy when palliation only would normally be given.

Other epithelial tumours

Malignant salivary tumours represent only 5% of all head and neck malignancies but chemotherapy has been used for advanced and recurrent disease. With both single agents and combination regimens tumour responses in up to 24% of patients are recorded, with a median duration of response of up to 6 months. Many of these tumours are slow growing and occur in patients whose general condition is often better than that found with squamous carcinoma. Chemotherapy could therefore be better tolerated.

Occasional responses have been recorded usually to 5-fluorouracil and doxorubicin (Alberts et al, 1981; Creagan et al, 1983; Robustelli et al, 1984).

Mucosal melanoma in the head and neck is rare, most often seen in the oral cavity and nasal fossa, representing 0.2-8% of all malignant melanomata. Primary treatment usually involves radical surgery, but chemotherapy has been used for recurrent or advanced tumours. The most effective drug seems to be dacarbazine, with a response rate of 20%. Bleomycin, vincristine, lomustine, cisplatin and dactinomycin have also been used (Berthelson et al, 1984), but most patients die within one or 2 years despite treatment.

Results of palliative chemotherapy

Survival

A controlled, randomized trial has shown that cisplatin does indeed prolong survival in patients with advanced or recurrent squamous carcinomata (Morton et al, 1985), the prolongation of median survival being 3 months. Another prospective, randomized study of survival in a similar group of patients has shown that there is no difference between methotrexate and cisplatin when used as single agents (Hong et al, 1983). It has also been shown in randomized trials (Drellichman, Cummings and Al-sarraf, 1983; Morton et al, 1985) that the addition of other agents does not prolong survival further.
**Tumour response**

Survival is prolonged in patients in whom a partial or complete tumour response is observed. This is to be expected; however, tumour response is a difficult parameter to assess accurately in anything less than a complete remission (McElwain, 1979; Watson, 1981). A 'partial' response is generally defined as the reduction in tumour size by 50% or more in the perpendicular bidimensional diameters of all observed lesions (Watson, 1981).

Anyone who has diligently tried to apply this definition will appreciate how difficult it is to assess response accurately in many patients.

If there is a complete tumour response, further treatment (surgery or radiotherapy) may control the disease. The overall chance of control of tumour in patients considered for palliative chemotherapy is probably about 1%.

**Side-effects**

The recording of side-effects is important in assessing overall benefit to the patient. The nature and degree of side-effects and toxicity vary with the agent used and the dosage given (see Table 24.3). Toxicity may be acute/subacute (observed during therapy or within 1-2 weeks after treatment) or chronic. Chronic toxicity is usually less severe and develops in a particular organ site or system.

The acute symptoms most disturbing to patients are severe nausea and vomiting (common with cisplatin) and alopecia (most common after bleomycin). Major dose-limiting toxicities are nephrotoxicity (cisplatin, methotrexate), myelosuppression (methotrexate, 5-fluorouracil), mucositis (methotrexate) and pulmonary fibrosis (bleomycin). Patients who experience severe symptoms are unlikely to submit to further courses of chemotherapy.

**Palliation**

The success of the chemotherapy in palliating the patient will depend not only on the effects on the tumour bulk and patient survival, but also on the physical and psychological well-being of the patient. The physical status can be maintained by careful and judicious use of medication and thoughtful dietary management. The psychological condition of the patient will depend to a large extent on the attitude and assistance of close relatives and all the hospital staff that the patient encounters. This amounts to a powerful placebo effect, the benefit of which must not be ignored, whether or not chemotherapy is given.

**Summary**

Patients with terminal head and neck cancer usually have a depressed psyche with an impaired quality of life and a poor general condition. They require special nutritional support and may not tolerate chemotherapy well. It is not known if response and prolongation of life reflect benefit to the patient. Palliative chemotherapy is expensive and toxic, and the possible benefits are limited. Cisplatin or methotrexate are the most effective agents, and the addition of other drugs does not carry any additional clinical advantage. Much care and thought is required before a patient is offered palliative chemotherapy.
The care of the dying

T. S. West

Terminal care for patients with malignant disease will need as much careful planning and coordination as did the earlier attempts to cure. It should be based on the tripod of symptom control, good communication and family support - factors of particular relevance to patient suffering from advanced cancer of the head and neck. For these patients uncontrolled pain and difficulties in feeding, breathing and speaking (Shedd, Shedd and Shedd, 1980), leading to isolation, are the major factors that have to be faced if any quality of life is to be maintained (Moore, 1978).

Symptom control

Pain

Although only about two-thirds of patients with far-advanced cancer experience significant pain in the weeks or months prior to death (Twycross and Lack, 1983), the fear of pain is a major problem. This element of fear enhances many other symptoms, particularly when it is reinforced by unrelieved chronic pain. The management of chronic pain differs in some important ways from pain control in acute situations (Table 24.4).

Table 24.4 Comparison of analgesic use in acute and chronic pain

<table>
<thead>
<tr>
<th></th>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim</td>
<td>Pain relief</td>
<td>Pain relief</td>
</tr>
<tr>
<td>Sedation</td>
<td>Often desirable</td>
<td>Usually undesirable</td>
</tr>
<tr>
<td>Desired duration of effect</td>
<td>2-4 hours</td>
<td>As long as possible</td>
</tr>
<tr>
<td>Timing</td>
<td>As required (on demand)</td>
<td>Regularly (in anticipation)</td>
</tr>
<tr>
<td>Dose</td>
<td>Usually standard</td>
<td>Individually determined</td>
</tr>
<tr>
<td>Route</td>
<td>Injection</td>
<td>By mouth</td>
</tr>
<tr>
<td>Adjuvant medication</td>
<td>Uncommon</td>
<td>Common.</td>
</tr>
</tbody>
</table>

The successful use of analgesics in controlling the chronic pain of terminal disease depends on an appropriate drug being given in the correct dose at regular intervals.

Appropriate drug

Mild analgesics, such as soluble aspirin or paracetamol, may be useful in the early stages, but there is no advantage in withholding the narcotics when they are needed. Morphine made up in a simple mixture is most commonly prescribed. If mild analgesia is needed 5-10 mg of morphine mixture 4-hourly may be sufficient. This can be increased as needed to gain control of the pain. More than 90 mg/4-hourly is hardly ever called for. Slow release morphine prescribed 12-hourly and giving the same total dose in the 24 hours as the morphine mixture can be useful. If swallowing is a problem, phenazocine sublingually or oxycodone suppositories in equivalent doses are useful alternatives (Table 24.5). There is no place for intravenous bolus administration.
Table 24.5 Useful strong analgesics and their equivalents

<table>
<thead>
<tr>
<th>Name</th>
<th>Dose interval (h)</th>
<th>Tablet Morphine equivalent (mg)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamorphine</td>
<td>4</td>
<td>10/15 (but elixir usually)</td>
<td>Identical to morphine</td>
</tr>
<tr>
<td>Phenazocine</td>
<td>8</td>
<td>20</td>
<td>More soluble</td>
</tr>
<tr>
<td>Dextromoramide</td>
<td>2</td>
<td>15 (peak effect)</td>
<td>Too short acting for regular use</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>8</td>
<td>30</td>
<td>Good for 'breakthrough' pain</td>
</tr>
</tbody>
</table>

**Dosage**

The correct dose of an analgesic is the lowest dose which controls the physical component of a patient's pain. Assessment of this dose depends on estimating a patient's need and then observing the effect of the chosen dose. Observations by ward staff and the patient's family are relevant and will also include reports on the patient's morale and mental state. But pain in cancer may be:

1. caused by the cancer itself;
2. caused by treatment;
3. associated with debilitating disease;
4. unrelated to either the disease or treatment.

It is important to determine the underlying mechanism of pain(s) in far-advanced cancer as the correct choice of analgesic, adjuvant medication or non-medical treatment is often dependent on the cause.

For example, bone pain will respond to a non-steroidal anti-inflammatory drug or to radiotherapy better than to an increase in narcotic medication; pain due to muscle spasm may be relieved by diazepam or physiotherapy; nerve compression pain may need the addition of a corticosteroid to the narcotic analgesic while superficial dysaesthetic pain sometimes responds to amitriptyline but intermittent stabbing pain may be alleviated by carbamazepine (Saunders, 1984).

**Interval**

Although extra medication should always be available, there is no place for 'on demand' prescribing in the control of the chronic pain. Drugs should be prescribed and given regularly and intervals between doses should depend on the half-life of the particular drug.
Dysphagia

Difficulties in swallowing and the fear of choking are common and very distressing to both patient and family; the wish to eat is almost equalled by the need to feed. A patient's swallowing should be observed in an attempt to pinpoint where the mechanism is failing. The consistency of solid or fluid that the patient finds easiest and most difficult to swallow should be noted and a suitable diet then imaginatively designed. Local causes of dysphagia, in particular candida infection, should be looked for and treated.

The best position for the patient (sitting up or semi-recumbent) and for his head and neck during meal times should be discovered. Gastric reflux can be a problem and may be controlled by raising the head of the bed and by prescribing alginites and antacids such as Gaviscon or Asilone. Excessive salivation may respond to drugs that primarily produce a dry mouth, for example, atropine 0.3 mg three times daily or sublingual hyoscine, or do so as a secondary effect, for example, the phenothiazines or, if indicated, an antidepressant.

Occasionally, when the dysphagia is due to interference with the neuromuscular mechanism of swallowing caused by inflammation and oedema splinting muscles and/or interrupting nerve pathways, the use of steroids (dexamethasone 8 mg daily) may produce a most gratifying improvement in the condition (Carter, Pittam and Tanner, 1982) and perhaps, surprisingly, does not cause an unacceptable increase in appetite. A 5-day trial, carefully assessed, should be considered and, if unsuccessful, can be stopped with no side-effects. Steroids may also help in reducing the oedema surrounding an oesophageal block due to tumour.

The basic problem of nutrition usually remains. The feelings of hunger and thirst are both diminished by regular narcotics - a useful side-effect. Meticulous mouth-care and the use of ice cubes, flavoured for example with whiskey or mango juice, alleviate the dryness of mouth that is often the patient's real complaint. Vomiting and constipation must and can be controlled (Butcher, 1983).

As the disease progresses and the patient becomes inevitably weaker and more cachectic, the doctor must be ready to discuss the problems of nutrition with the patient, his family and the team who are caring for him. The pros and cons of instituting tube or parenteral feeding or of performing a gastrostomy during the terminal period may need to be repeatedly reassessed. A cervical pharyngostomy is probably a more acceptable procedure. Almost always the decision will be correctly reached that at this stage such a manoeuvre is not inappropriate and that quality of life will be best maintained by the attention to the person rather than to his loss of weight.

Dyspnoea

If the patient has a tracheostomy this will, of course, need proper care often by the patient himself. If a patient is short of breath the cause must be found. Difficulty in breathing and the feeling of breathlessness need to be distinguished. The fear of suffocating can lead to sensation of severe breathlessness. The use of correctly prescribed regular morphine, which does not depress the respiratory centre (Walsh, 1984), and/or diazepam, together with the
sense of security provided by a competent team will take away some of the fears that produce the feeling of breathlessness.

Glucocorticosteroids may help to relieve bronchospasm and may also reduce tumour oedema compressing trachea or bronchus. Excess fluid in the lungs or throat can be dried up by hyoscine given by injection or sublingually. If the dyspnoea is exacerbated by infection, this can be treated if the patient's general condition makes this still appropriate. However, for any asymptomatic pneumonia at the very end of life, antibiotics may well not be the treatment of choice. Appropriate discussion with the care givers, the family and sometimes with the patient himself then allow decisions to be made to give the patient regular morphine to take away the feeling of breathlessness and regular hyoscine to dry up the secretions. Suction and oxygen should be immediately available but they are both frightening and antisocial and, if the patient's medication and sense of security are good enough, it is remarkable how seldom that are needed.

**Other symptoms**

**Fungating lesions**

Even in the terminal stage, fungating lesions may respond well to one or two fractions of radiotherapy. The site, rapidity of growth and tendency to bleed need to be noted so that the radiotherapist can give an informed opinion on the possible efficacy of treatment. Fungating lesions may become infected and may smell.

**Sinus formation**

This can occur and may be distressing and difficult to manage. An attempt should be made to distinguish a sinus between the mouth and the skin and one between the pharynx or oesophagus and the skin. Discharge may then be reduced by lessening the production of saliva or by adjusting the consistency of the diet. A barrier cream may help to prevent excoriation of the skin. Sinuses may become infected.

**Infection**

Infections are likely to occur. If the infection is producing increased oedema it may be worth trying to control this with broad-spectrum antibiotics and perhaps corticosteroids.

**Smell**

Smells can be difficult to control. If the smell is due to infection by an anaerobic organism, metronidazole is indicated. It can be given by suppository. Frequent wound toilet is necessary and an air purifier can help.

**Toilet**

Meticulous wound toilet and mouth-care are fundamental for patients with infected lesions with or without fungation, sinus formation or smell. The frequency and skill with which lesions are cleaned and dressed are more important than what is used. Toothpaste on
a tooth-brush (unless the mouth is painful) can be the most effective way of keeping the mouth clean. Thrush should be expected to occur and must be controlled. If the dressing is painful dextromoramide (Palfium) is an appropriate short-acting analgesic to give half an hour before the dressing. It can be absorbed sublingually.

**Constipation**

Constipation should be prevented. If a patient is on regular narcotics he should also be on a regular aperient but suppositories, enemas and even manual removals may still be necessary. Impaction of faeces must *never* be allowed to occur.

**Pressure areas**

Pressure areas in a dying and cachectic patient should be prevented by good nursing care which demands adequate staffing. Management of bowel and bladder problems help to prevent pressure sores.

*Psychosocial factors in symptom control*

Patients with cancer of the head and neck often have a history of alcoholism, heavy smoking, family conflicts, unstable work histories and a lack of close interpersonal relationships (Cote, 1978). Such people are not easy to be in sympathy with and now that they are faced with a particularly frightening disease, their family and the professional team may have to make a particular effort to overcome barriers of resentment and even of revulsion.

Although no drugs can take the place of staff and family support, people who need comparatively large regular doses of analgesia for their pain and physical distress may also need regular medication for their very understandable mental anxiety and anguish. When morphine is first begun, a weak phenothiazine such as prochlorperazine should also be prescribed to prevent nausea or vomiting. Although this can often be stopped after a few days, in patients with cancer of the head and neck it may need to be continued, and if the patient is under increasing mental stress can be changed for a stronger drug (chlorpromazine, methotrimeprazine (Nozinan)).

The use of the narcotics for the physical components and of the phenothiazines for the mental components of pain is a balancing act and they need to be kept in some sort of proportion to each other. When the correct dose of each has been ascertained, the syringe driver can be used successfully if the patient cannot swallow or is vomiting. Antiemetic and anticholinergic drugs can also be given concurrently. Drugs commonly used in the syringe driver as St Cristopher's Hospice, London, include:

(1) diamorphine;
(2) methotrimeprazine;
(3) hyoscine;
(4) cyclizine;
(5) haloperidol (Oliver, 1985).
Clinical depression is surprisingly uncommon, but if it is properly diagnosed, an antidepressant drug is useful and will certainly give a good night's sleep as well as dry up secretions. There is also increasing evidence that the tricyclic antidepressants can produce an analgesic effect (Walsh, 1986), particularly when nerves are invaded.

**Communication**

*The professional team*

Inability to communicate is frustrating when one is with friends, but it is frightening when one is among strangers. Patients with progressive cancer of the head and neck should ideally be cared for by the team they first met before either the diagnosis of malignancy was made or radical surgery embarked on. Continuity of care establishes a mutual trust that can overcome any breakdown in communication and should be planned for from the outset of the disease.

However, staff who have already successfully cared for people with communication problems can approach a new patient with a degree of unembarrassed confidence that may produce immediate improvements in the situation. The patient relaxes and the ability to communicate improves. If the patient is disfigured or the lesion smells, staff have to train themselves to look past these barriers to the real person they hope to reach. By taking the patient's hand, asking permission to sit on his bed and then, while talking, establishing eye contact with him important statements concerning friendliness, good manners and the willingness to face facts are made.

Calling in a speech therapist and the introduction of mechanical aids to communication may be considered even at this late stage. If either prove to be of no help yet another failure has to be coped with.

Throughout the course of the disease the doctor should be ready to answer questions and also be available for discussion (Miller, 1977). The statement, 'My patients never ask me ...' is properly countered with 'I wonder why not ...?'

Questions may arise for no obvious reason, but there are times of crisis, like the first evidence of disease, confirmation of diagnosis, the appearance of secondary spread, the stopping of active treatment and sometimes the death of a fellow patient, when the patient (and his family) may want to talk but may need particular help in initiating the conversation. Sometimes the patient will confide in another member of staff that he is worried about some aspect of his condition. This can be a way of letting the doctor know that more is wanted.

To the question 'Is it cancer, Doctor? Am I going to get better?' it is important not to lie if for no other reason than this lie cannot be sustained ('You don't go to radiotherapy ten times without knowing what's going on'). But it is also important not to give either the stark truth or to confuse the answer in medical jargon. When such a hard question is asked, it is proper to return the ball to the patient's court and allow him the chance to play it in his own style. 'Have you been suspecting that?' allows time for the patient and doctor to look at each other. The way he responds will help to set the pace of the dialogue.
The doctor should only answer one question at a time, watching to see the effect of his reply and checking that his words have been understood. It is wise to find out what the patient understands by the word ‘cancer’ particularly if other words such as ‘tumour’, ‘growth’ or ‘abscess’ are being used.

When one point has been properly considered the patient should be encouraged to restate the next question: ‘You asked if you were going to get better ...?’ The response to such a seemingly tentative probe will help the doctor to decide how far he should now move into discussing available therapy and the possible advantages and consequences. With each new piece of information given the doctor must pause, decide if the patient has understood and again allow him either to call a halt or to ask for further information.

If the spouse (or other important person) is not present at such an interview this should be noted and arrangements put in hand for them to be seen. (Failure to keep the appointment will suggest a family in need of help.) In any case it is helpful to make an appointment to see the patient again in a few days' time in order to answer questions that may have come up after the first shock has worn off.

It can also be helpful to have one of the nursing team present. She will help monitor the interview and can check afterwards that there has not been any serious misunderstanding.

The patient's general practitioner can usefully be informed of the situation. Although they themselves are often difficult to contact, general practitioners usually have available and intelligent secretaries.

The patient

When talking to people about cancer it should be remembered that they have four major fears:

(1) choking;
(2) suffocating;
(3) running out of pain-killers;
(4) isolation.

If these fears are verbalized, reassurance that the patient will not be left to choke or suffocate, that the pain-killers will not run out and that, whatever happens, the patient will not be abandoned can be honestly given.

There remains the hard question ‘Will I die?’. The plain answer is, of course, 'Yes'. But this is a time to take a broader view than just one of life or death. Dying and the fears that go with it may need to be discussed but the matter of living, as fully as possible, should also be on the agenda. This is not a time to take away all hope but rather a time for unfinished business to be completed. Often there is a goal to be aimed for - an anniversary or a reconciliation - which can introduce a positive element into an almost impossible situation.
Sometimes this is also the time for the doctor either to share his own belief that death is not the end or else to try to discover if the patient would like an appropriate minister of religion contacted.

The family

It may have been decided to see the family separately. Often it is right to do so. But statements such as 'Don't tell him doctor, he'd give up if he knew', then have to be dealt with. Such a request has to be taken seriously, but it has to be carefully explained that the patient is not a child (in fact children are often more realistic than adults) and has a right to know more about his own condition; that he will not be told more than he wants and needs to know; that if the doctor does find himself telling the patient more he will not let down the family (and their careful lying) in the process. It can also be stated that, if the matter is properly timed, people do not often give up; rather on learning of mortality they have the opportunity to sum up all that life has been and has meant to them (Saunders, 1984).

When the family (or, indeed the patient) ask 'How long?', no figure should be given in the answer. 'Months rather than years' or 'weeks rather than months' or even 'days rather than weeks' give some indication of the time-scale that the family must work on. But the doctors said he had six months' is unhelpful - even if this is what the family heard rather than what the doctor actually said. If the patient dies before the appointed date the family may be unprepared; if he survives after it both he and they have to face a difficult 'in-limbo' situation when the final curtain has failed to come down.

When people ask 'How long?' often the real question is 'How? - what is the manner of death?' Few people have seen a person die and their image is of a dreadful media-type death. Reassurance that death is almost always an increase in weakness and sleepiness, leading to a failure of all the bodily mechanisms; that pain, choking and suffocating, if they occur, can and will be instantly coped with and that if the family cannot be with the patient themselves he will not be left alone, will help. If they appear exceptionally anxious it is worth remembering to ask if anyone else in the family died of cancer - and if so that the death was like.

At such a meeting with the family, children should not be excluded. Children are realists and in practice it is often the child who asks the question that the adults do not dare to voice. After such a meeting, in order to avoid family secrets further isolating the patient, it is important to discuss with the family how much they are going to share with him.

Support of the family

Efforts to improve communication between the patient, the professional team and the family will inevitably lead to involvement with the family. It is likely that they will need support for they, as well as the patient, need to make drastic psychosocial adjustments.

Communication

It is important to obtain a family profile, to discover something of the strengths and weaknesses that a family is bringing to this current crisis and to learn something of their
previous character and behaviour patterns (Earnshaw-Smith, 1982). Drawing a family tree and noting in particular past losses and how the family have coped with them point up those who are in most need of help and those who may provide it.

If family members have never communicated well, it is unlikely that things will change radically at this stage. But if communication has broken down, the presence of an unbiased outsider can act as a catalyst. It is a privilege to sit in with a family, one of whom is soon to die, and by little more than one's presence to help them look each other in the eye, touch each other and laugh as well as cry.

**Family meetings**

Getting the family together should have been attempted at the onset of the disease. Often this is not achieved and when there is no family the team will find themselves providing this aspect of care.

When a family can be assembled to meet the medical, nursing and social work team they will feel supported rather than threatened as it becomes obvious that the two sides have a common objective and are working out how to form themselves into one united team. Such an exercise also avoids the problems that arise when family members are given information separately.

Among matters that may need to be brought out into the open and discussed are guilt from the past and fears for the future, the difficulties that a change in body image can produce in the patient and in the family around him, anger that this outrage should have been allowed 'by God'. At this point it may be helpful to ask the family if they would like to discuss matters with the chaplain.

The need to feed and the need to let go, and - if it has not already been decided - where the patient should die may also need to be talked through.

The right place for a patient to die will depend on his wishes, the likely mode of death, the wishes and availability of the family and the local resources, whether they be based on the home, the hospital or a hospice.

If the decision is made for the patient to die at home it must be made clear who is in charge. The general practitioner should be the one to organize local services, including nursing services like those provided by Macmillan teams or, at night, the Marie Curie nurses. Should the home situation break down, re-admission must be immediate and easy. If a local hospice is available and considered appropriate, liaison should be early rather than late in the planning.

Whether hospital, home or hospice is decided on as the place where the patient (and family) will be most appropriately cared for at each stage, it must be clear who is responsible. This can only happen if there is good communication between all the services available (Saunders, 1984).
There can be no absolute answers to these questions and again uncertainty remains perhaps the hardest factor of all for the cancer patient and his family (as well as the professional team) to contend with.

By looking at these matters together, some correct decisions will be arrived at and a climate of truth can be established in which the family members have a chance to say 'sorry', to say 'thank you' and to say 'goodbye'. Such expressions of feeling made verbally or non-verbally, are important for the dying patient; they are even more important for the family that have to continue to live.

**The management of the final phase**

It may be as hard for the professional team as it was for the patient and family to accept that the time has come for no further aggressive therapy. While there are still plans for good symptom control, for improving communication and for mobilizing family support, the team are not stating that nothing more can be done.

The time will come, unless a catastrophic incident intervenes, when the patient can be said to be dying. Recognizing this time is a matter of experience as well as observation. Often the nursing staff are far more realistic than their medical colleagues and it is they who will collect and prepare the family as well as know what comfort and even suggest what medication the patient most needs.

At this stage most patients need their medication by injection. It can be important to explain to relatives (and sometimes staff) that the medicine now being given by injection is an equivalent dose to that given by mouth, and that the deterioration in the patient's condition is due to the disease process and not to the drugs.

This is also the time to review all the patient's medication. Steroids, diuretics and antibiotics are examples of drugs that will probably no longer be appropriate, as the deteriorations they were prescribed to prevent are now inevitably occurring.

The main symptoms to distress a patient dying with cancer of the head and neck are:

1. pain;
2. breathlessness;
3. restlessness;
4. accumulation of secretions.

All these are problems that the patient and those around him have been facing for some time.

Although there is never any point in withholding necessary narcotics, pain does not usually increase markedly over the last 24 hours. If the patient's symptoms had already been reasonably well controlled, a simple increase of the analgesic and continuing it regularly will not only bring the pain under control again, but will also help to cope with any increase in breathlessness or restlessness.
Increasing the dose of phenothiazine (or changing, for example, from chlorpromazine to methotrimeprazine) will help combat mental distress, while diazepam can be useful if physical restlessness is disturbing the patient and those sitting with him. Accumulation of secretions and the 'death rattle' can often be controlled by an injection of hyoscine 0.4-0.6 mg. Hyoscine, when combined with a narcotic and a phenothiazine, is also a most effective sedative and tranquilizer.

If a haemorrhage is feared, diamorphine and a phenothiazine in a slightly higher dose, together with hyoscine, should be prescribed in anticipation and be immediately available.

Terminal pneumonia is usually a peaceful and almost natural way to die. Distressing symptoms like copious phlegm may be treated with hyoscine. Sputum that is difficult to expectorate may respond to a mucolytic. A distressing pleurisy should be treated with an increase in analgesic medication. Carefully monitored physiotherapy may have a part to play.

Isolation can be the most distressing complication of all. If the family are unable, for whatever reason, to be with the patient during his final hours, every effort should be made for one of the team to sit with the patient, holding the hand and demonstrating that just because he is now dying he has not been abandoned.

**Bereavement**

Family support should have been organized during the terminal illness. By getting to know something of the strengths and needs of individual family members, the professional team will have made some progress in identifying those who will need organized bereavement follow-up.

In hospital or in a hospice, an important occasion for assessing such a need is the day after the death of the patient when the family come back for the certificate, the possessions and to view the body. This visit should be taken most seriously and a member of the team should be available, if the family wish it, to spend time with them, living through the past days or sometimes years, and making some estimate of the family's ability to cope with all that lies ahead.

The patient's general practitioner should always be telephoned by the ward doctor and informed of the patient's death. If it is considered the family are at risk he/she can be alerted.

If bereavement counselling is needed, and trained people are available, this should be organized as a continuation of the work of the original caring team (Yorkstone, 1981).

**Conclusion**

In such ways as those prescribed above, the professional team caring for patients who cannot be cured will find enough job satisfaction to continue their work of skillful and effective care.