Cancer pain

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Incidence of cancer pain

A number of studies have been undertaken to determine the incidence of pain in patients with advanced cancer. Such studies can be divided into two groups. The first are based on the memories of surviving spouses who were questioned up to a year after the patient's death; the second on the patient's complaint of pain on admission to a hospice or at attendance at a hospital out-patient department.

Unfortunately, neither of these methods gives an accurate picture. A retrospective study based on family memories may be biased by feelings of guilt or anger, or perhaps by a reluctance to admit the degree of suffering. On the other hand, the memory of pain may be erased if control has been satisfactory. Three surveys using this method all showed that 50% of families remembered significant unrelieved pain (Turnball, 1954; Aitken-Swan, 1959; Parkes, 1978).

In contrast Haram (1984) monitored the incidence of pain in patients on admission to St Christopher's Hospice. Over a 5-year period (1977-81), this varied between 70% and 80%. These figures, however, almost certainly overestimate the general incidence of pain as hospices give priority to patients with pain and other distressing symptoms.

Causes of cancer pain

An analysis was made of the causes of pain in the first 100 patients with malignant disease on admission to St Christopher's Hospice in 1980 (Table 1). Of these 100 patients, 82 were in pain. Several had two or more causes of pain. In no case was the cause thought to be purely psychogenic.

Bone pain

This is one of the more common causes of pain in advanced malignant disease. It is often severe and can be difficult to control. Patients' description of their pain is very variable. It may be termed 'a dull ache', 'red-hot' or even 'stabbing'. Bone pain is frequently exacerbated by movement or by pressure. Certain cancers are more likely to produce bone

metastases. Of 394 patients treated with radiotherapy for bone pain, 50% had breast cancer, 15% lung cancer, 15% prostatic cancer and 20% other malignancies, such as myeloma, thyroid and renal cancer (Ford and Yarnold, 1983).

It is thought that prostaglandins are liberated by tumour deposits in bone (Editorial, 1976) causing resorption of surrounding bone and sensitisation of nerve endings to painful stimuli. Bony metastases may therefore cause pain when they are relatively small. As they enlarge they may cause stretching of the well-innervated periosteum, and eventually lead to distortion of the bone under stress and pathological fracture.

Liver pain

Pain over the liver was only reported in a third of patients with hepatomegaly from secondary carcinoma. The pain is usually described as a constant dull ache in the right upper abdomen exacerbated by leaning forward but some patients report a sudden stabbing pain over the liver coming in bouts and lasting for a few minutes once or twice a day. Tumours of the bronchus, pancreas, stomach, large bowel and breast are common causes of liver metastases.

Pelvic pain

Pain originating in the soft tissues of the pelvis is usually felt in the rectum, even if this has been previously removed at operation. It is less commonly referred to the low back, hypogastrium, perineum and genitalia. It is often exacerbated by sitting down, sometimes by constipation. It may be described as rectal fullness 'like a tennis ball' or as a severe shooting pain 'like a red hot poker'. The great majority of patients with pelvic pain have primary tumours in the rectum, colon or female reproductive tract. Such tumours may remain localised in the pelvis for long periods. In a survey of 40 patients with

TABLE 1. Causes of pain in the first 100 patients with malignant disease admitted to St Christopher's Hospice in 1980*

Visceral pain	29	Lymphoedema	3
Bone pain	17	Headaches due to raised intra cranial pressure	3
Soft-tissue infiltration	10	Pain in paralysed limb(s)	3
Nerve compression	9	Generalised aches	3
Secondary infection	6	Non-malignant causes	17
Pleural pain	4	Cause unknown	6
Colic due to obstruction	4		
		Total	114

* 18 patients had no pain.

terminal disease, one-third had experienced pelvic pain for over a year (Baines and Kirkham, 1984).

Chest pain

Pain from the thoracic viscera and true chest wall pain are both felt in the chest wall but visceral pain is referred to the area supplied by the upper four thoracic nerve roots. Thus a complaint of pain in the lower chest usually indicates local disease but upper chest pain may be caused by disease deeper in the chest. In a series of 78 patients with chest pain, it was usually described as 'an ache in the ribs' or a 'tightness'. In 10% it was pleuritic. Seventy percent had primary tumours in bronchus or breast.

Intestinal colic

This may occur in abdominal or pelvic malignancy where there is complete or partial (subacute) bowel obstruction. The commonest primary tumour to cause obstruction is carcinoma of the ovary. Colic is felt centrally in the umbilical or hypogastric regions. The pain usually comes in paroxysms and can sometimes be relieved by local heat or pressure.

Nerve compression pain

Pain may be caused by compression or, less commonly, infiltration of nerve roots, plexuses and peripheral nerves by tumour. Such pain is experienced in the corresponding dermatome, i.e., the area of the body where pain is felt if the nerve is stimulated. Nerve compression pain is often described as 'aching' or 'burning', less often as 'shooting'. The pain is often associated with weakness, sometimes with paraesthesiae and numbness. As both cranial and peripheral nerves can be involved by tumour at any site along their lengths there is a great variety of pain syndromes. Probably the most important are the painful arm due to metastases in the cervical spine or involvement of the brachial plexus and the painful leg due to metastases in the lumbosacral spine or pelvis.

Non-malignant causes of pain

A considerable proportion of cancer patients report pains that are not directly related to the disease process. These may be caused in three ways:

(1) Related to treatment. A thoractomy scar may continue to be painful for months or years following surgery. Other surgical procedures also occasionally cause persistent pain. Bladder spasm is sometimes caused by a catheter. Constipation and dyspepsia can be due to medication.

(2) Associated with debilitating disease. Patients with advanced cancer are often bed- or chair-bound, and experience aches and pains as a result of being relatively immobile. Bedsores may develop and constipation be made worse by anorexia and lack of exercise.

(3) Due to other diseases. Many elderly patients suffer with arthritis, rheumatism, piles and other painful conditions.

Management of cancer pain

Fortunately no one is asked to manage cancer pain in general, only the cancer pain of a particular patient. In order to plan the best course of treatment the following questions should be borne in mind.

- (1) What pathological process is causing the pain?
- (2) What anatomical site is affected?
- (3) Is it possible to arrest the disease process causing the pain by radiotherapy, chemotherapy or hormonal manipulation?
- (4) Is the affected area supplied by a nerve, or nerves, which can be blocked without causing unacceptable side effects?
- (5) Does the patient's description of the severity of his pain and its response to previous medication show what type of analgesic should be used and in what dose?
- (6) Does this type of pain respond to adjuvant medication, for example anti-inflammatory drugs or corticosteroids?
- (7) What role do emotional, social and spiritual factors play in this patient's situation?

The answer to these questions will guide in planning treatment using one or more of the following methods.

Radiotherapy

Palliative radiotherapy has an important part to play in the relief of pain from bone metastases. The relief usually begins within a few days of starting treatment and maximum effect is reached 2–4 weeks after completion. A recent survey (Ford and Yarnold, 1983) suggests that pain relief does not depend on the histological type of the primary tumour. In their review of 11 series from different centres 92% of patients reported partial or complete relief lasting for many months.

There appears to be no correlation between pain relief and number of fractions; single-dose treatments giving the same relief as multidose schedules. It would therefore seem appropriate to give the fewest possible treatments compatible with the avoidance of side effects. This will mean a single treatment to a long bone, and usually five treatments over 2–3 weeks for metastases in the bony pelvis or vertebrae (Bates, 1984).

A reduction in size of a bronchial or pelvic tumour following radiotherapy will sometimes lessen pain but if there is nerve root or plexus involvement the results are often disappointing. The development of spinal cord compression due to a collapsing dorsal vertebra is an indication for urgent radiotherapy plus high-dose corticosteroids (dexamethasone 16 mg/day). Hypertrophic pulmonary osteoarthropathy can sometimes be relieved by irradiating the underlying bronchial carcinoma.

Nerve blocks

Certain cancer pains are localised and are mediated by nerves which can be blocked without causing unacceptable side effects. Over the last 5 years there have been regular rounds at St Christopher's Hospice with anaesthetists specialising in Pain Clinic work (Baxter, 1984). They have been able to carry out many procedures in the wards without delay and disturbance to patients who are often very ill. About 5% of patients receive a local anaesthetic or neurolytic injection. The following were the most commonly used in a series of 300 nerve blocks:

- (1) Coeliac axis block for abdominal pain from tumours involving liver, stomach, pancreas, ileum and most of the colon. The block will often relieve colic from intestinal obstruction and tenesmus from intrapelvic tumour.
- (2) Paravertebral blocks for chest wall pain.
- (3) Intrathecal block in the lumbosacral area for perineal pain.
- (4) Brachial plexus nerve block for severe arm and shoulder pain, if the limb is already weak and numb.
- (5) Hip block, injecting the nerve to quadratus femoris and the obturator nerve for painful metastases involving the hip joint.

Following a successful block it is possible to reduce rapidly the level of analgesia and sometimes to discontinue it. The transcutaneous electrical nerve stimulator has only rarely been found of value in treating cancer pain.

Analgesic drugs

Before starting the treatment of cancer pain with an analgesic the following principles should be remembered:

- (1) Cancer pain is continuous pain requiring regular preventive treatment.
- (2) The dose of analgesic should be the lowest compatible with pain control.
- (3) The exact dose is found by titrating the analgesic against the patient's pain, increasing the dose until the patient is painfree.
- (4) The next dose is given before the effect of the previous one has worn off and therefore before the patient may think it necessary.
- (5) Oral medication is preferable to injection.
- (6) Psychological dependence ('addiction') does not occur in cancer patients.
- (7) Tolerance is a minor problem and is usually self-limiting after a few weeks.
- (8) Continued reassessment is needed as old pains worsen and new pains may occur.
- (9) Adjuvant therapy will be necessary. Laxatives are almost always needed for constipation, and antiemetics sometimes needed for nausea and vomiting.

A full review of all the analgesic drugs which can be used to treat cancer pain is not appropriate but those most frequently used will be discussed.

Paracetamol. This is preferable to aspirin for the control of mild pain unless the specific anti-inflammatory effect of aspirin is required, for example in pain from bone metastases. Paracetamol does not cause gastric disturbance, and up to 1 g 4-hourly may be given.

Proprietary compound preparations of paracetamol are widely used. Among those available are Panadeine Co. (paracetamol 500 mg and codeine 8 mg) and Distalgic (paracetamol 325 mg and dextropropoxyphene 32.5 mg). In spite of recent controversy about the use of Distalgic many doctors and patients continue to find it efficacious although it causes unacceptable side effects occasionally.

Morphine. If cancer pain is not controlled with non-narcotic and weak narcotic analgesics, and if appropriate adjuvants have already been introduced, a change should be made to a strong narcotic. Morphine remains the most useful strong narcotic. It

is well absorbed by mouth, and has a plasma half-life of about 2.5 hr. It should be given every 4 hr. This maintains an adequate blood level for analgesia and minimizes toxic side effects. Both morphine sulphate and morphine hydrochloride are widely available and are interchangeable.

Morphine is usually prescribed in chloroform water as this acts as anti-microbial preservative. A typical prescription might read:

Morphine hydrochloride 20 mg
Chloroform water to 10 ml

to take 10 ml 4-hourly.

If pain has just escaped control by paracetamol and codeine/dextropropoxyphene, morphine 10 mg 4-hourly will probably be adequate. The dose can be increased every 24–48 hr, or more frequently if pain is severe. Suggested doses are 10 mg, 20 mg, 30 mg, 45 mg, 60 mg, (90 mg, 120 mg and 150 mg—these are only rarely needed). If changing from paracetamol alone, a 5 mg dose may suffice.

MST-Continus is a controlled release preparation of morphine sulphate which can be given 12 hourly; 10 mg, 30 mg, 60 mg and 100 mg tablets are available. Patients appreciate the simple twice daily regimen but titration of dose is less easy. Severe pain is probably better controlled with 4-hourly morphine solution, at least initially.

Diamorphine. In a randomised controlled trial of oral diamorphine and morphine (Twycross, 1977), the two drugs were found equally effective if given in the ratio of diamorphine: morphine = 1:1.5. Both are at least twice as potent by injection as by mouth.

Diamorphine remains the drug of choice for injection because of its greater solubility. Injections are required if the patient is vomiting, unable to swallow or semicomatose, but very rarely simply to control pain. A battery operated syringe driver is manufactured by Graseby Medical and gives a continuous subcutaneous infusion. It is a convenient way of giving diamorphine, it can be reloaded every 24 hr by the nurse and 4-hourly injections are avoided.

Phenazocine. A small number of patients have persistent nausea with morphine or dislike a liquid preparation. Phenazocine 5 mg is equivalent to morphine 25 mg and it can be given 6–8 hourly.

Dextromoramide. This has a short duration of action, about 2 hr, and is sometimes useful to 'boost' analgesics, for example before a painful procedure such as a wound dressing.

Adjuvant medication

A knowledge of adjuvant drugs for pain control is extremely important as their correct use will usually avoid rapid escalation of the dose of narcotic analgesic.

Non-steroidal anti-inflammatory drugs. Tumours in bone, and possibly elsewhere, liberate prostaglandins which sensitise nerve endings to painful stimuli. Anti-inflammatory drugs inhibit prostaglandin synthesis and are therefore effective at the site of the pain, whereas narcotic analgesics act centrally. They are the treatment of choice in bone pain and are occasionally used with benefit in other types of pain. There is no general consensus as to the most effective drug, probably a first-line treatment should be aspirin or a propionic acid derivative such as flurbiprofen or ketoprofen. Indomethacin is equally effective but causes more gastrointestinal effects.

Glucocorticosteroids. These are widely used in the control of many types of pain in the cancer patient. The common factor in 'steroid-responsive' pain is that it is caused by pressure from tumour plus peritumour inflammatory oedema. Corticosteroids reduce the inflammatory response and thus diminish pain. The following are examples of steroid use:

(a) Headaches due to raised intracranial pressure. Dexamethasone 16 mg/day is given.

(b) Nerve compression pain. Most patients will require narcotic analgesics but adjuvant steroids using dexamethasone 4–6 mg/day may help in intractable pain.

(c) Visceral pain, especially hepatomegaly and pelvic pain.

(d) Lymphoedema, caused by pelvic tumour.

(e) Bone pain. Corticosteroids are less effective than non-steroidal anti-inflammatory drugs but are occasionally of value if the latter are not tolerated or are not giving relief.

In all these situations, there is no guaranteed response, and a week's trial of a corticosteroid is recommended. The drug can be discontinued if ineffective or reduced to an acceptable maintenance dose if pain control is achieved.

Muscle relaxants. (a) Diazepam or baclofen are used for muscle spasm secondary to anxiety, bone metastases or in spastic paraplegia.

(b) Smooth muscle relaxants such as hyoscine and the antidiarrhoeal loperamide are used to control intestinal colic in patients with inoperable bowel obstruction. Emepronium is of value in bladder or urethral spasm secondary to tumour, infection or catheter.

Antibiotics. (a) Pleural pain is often caused by secondary infection rather than malignant involvement of the pleura.

(b) Deep infections, especially in the pelvis increase pain as well as causing an offensive discharge. Metronidazole is used, often in combination with a broad spectrum antibiotic.

(c) Superficial infections such as fungating breast tumours rarely benefit from antibiotics unless there is considerable surrounding cellulitis. Local applications, such as povidone-iodine with liquid paraffin are more effective.

There is much discussion about the use of psychotropic drugs in the management of cancer pain (see Hanks, 1984, this issue). At the present time a trial is being undertaken at St Christopher's Hospice to see if tricyclic antidepressants have a morphine-sparing effect; results are awaited. It is generally recognized, however, that anxiety and depression increase the experience of pain. It is preferable to treat these with non-drug methods; emotional support from staff, diversional therapy, physiotherapy and relaxation. If such methods are inadequate then psychotropic drugs should be prescribed, usually diazepam for anxiety and amitriptyline for depression.

Total pain

Pain is a somatopsychic experience (Craig, 1984, this issue). To emphasize the complexities of pain in cancer, Saunders (1964) has used the phrase *total pain* to encompass physical, mental, social and spiritual components. Unless these are addressed, the likelihood of successful pain control is much reduced.

Mental pain

While lip-service is paid to the fact that anxiety and depression exacerbate pain, the organisation of the medical services for cancer patients often makes it impossible for adequate attention to be given to emotional needs. The busy out-patient clinics in many general hospitals, with rapidly changing junior staff, sometimes mean that a patient attending for follow-up appointments never sees the same doctor more than once. The large ward round almost ensures that the routine question 'How are you today?' receives the reply 'All right, thank you'. Medical records are filled with details of physical examinations and investigations—there is no space allocated to the patient's feelings about the situation or his insight into his condition.

Patients facing life-threatening illness have a great need for someone to spend time with them as they go through periods of denial, sadness and anger before reaching the final stage of acceptance (Kubler-Ross, 1970). Many will want to ask questions about the future, about treatment plans, alternative medicine,

symptoms they fear and, surprisingly, often about the process of dying. Honest discussion paves the way for the voicing of buried fears such as 'Will you know that I'm really dead? I've always been terrified of being nailed into the coffin when still alive'.

Social pain

Most patients are members of a family, and much distress in cancer is related to the fear of separation. Unfortunately both medical staff and families can increase this sense of isolation by what is said and by what is omitted. The common practice of doctors in telling the truth to the spouse but not the patient often leads to enormous stress in a marriage. In addition, the family may try to protect the patient by keeping financial problems to themselves.

Experience has shown that many couples and families are greatly relieved when encouraged slowly to share the truth. This may require the presence of a doctor or nurse as a third party, helping the family, including children, to talk openly to each other (Earnshaw-Smith, 1981). At a time of crisis people often show a great capacity to resolve problems and families can come closer together. This is a great support to the patient and also to those who will be bereaved.

Spiritual pain

Faced by serious illness or impending death many patients will begin to think more deeply about their life and its meaning. Some will be overwhelmed by a sense of failure or guilt about things left undone or broken relationships. Others feel deeply the meaninglessness of their life, that there is no point or purpose in it. A few will be deeply troubled by what happens after death. All these fears, and others, are components of spiritual pain which needs relief just as much as the physical pain of a broken bone.

Of course the approach to each patient will be different, it must depend on his philosophy of life and the presence or absence of a religious faith. But quite often the doctor or nurse will be asked 'What do you really think?' and the opportunity comes not only to ask the chaplain to visit—important though this may be—but to say something about a God who loves and cares and forgives.

Results of treatment

Experience from hospices show that 85% of cancer patients have pain satisfactorily and relatively easily controlled with simple measures. A further 10% prove more difficult, requiring frequent alterations of the drug regimen and perhaps non-drug methods to maintain control of pain. In the remaining 5% pain control is not satisfactory, an analysis of these usually

shows one or more of the following factors: severe but intermittent pain; a short time or poor compliance with treatment; major emotional or family problems.

In an evaluation of terminal cancer care, Parkes and Parkes (1984) repeated a study first undertaken a decade earlier (Parkes, 1978). Surviving spouses of patients who had died in St Christopher's Hospice and other local hospitals were interviewed. A striking finding in this second study was a marked reduction in the proportion of patients thought to have suffered severe pain in the preterminal or terminal period in both hospice and hospital patients. Over the 10-year period there had been a great upsurge of interest in the management of symptoms, especially pain, in the cancer patient. This study shows what can be achieved when the principles underlying cancer pain management are appreciated and applied.

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