

Cancer pain management: experience of 702 consecutive cases in a teaching hospital in Hong Kong

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Effective pain control is essential in the management of patients with cancer. We present our experience in the management of 702 patients with cancer pain. Nearly 88% of patients were discharged by the Pain Management Team with a visual analogue scale of pain of less than 3 and more than 90% of patients had improved appetite and sleep on discharge. These promising results were achieved through an emphasis on comfort and function, close liaison among clinicians from different specialties, and a variety of analgesic modalities. Oral drugs remained the mainstay of treatment, supplemented by alternative routes of drug administration such as subcutaneous, intravenous, and transdermal delivery. The main side effects observed were nausea (16%) and constipation (8%). Neural blockade, including coeliac plexus blockade, intercostal nerve blockade, and the administration of opioids via subarachnoid or epidural routes were also employed in selected patients.

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Introduction

There are an estimated 6 million cancer deaths worldwide annually.¹ Approximately 30% to 50% of all cancer patients suffer from varying degrees of pain.²⁻⁴ The incidence of pain increases to 80% in the pre-terminal stages.⁵⁻⁷ Locally, cancer has been the most common cause of death for many years; the incidence increased from 9021 (156.7 per 100 000) in 1992 to 9390 (155.9 per 100 000) in 1994.^{8,9} Although the exact incidence of cancer pain in Hong Kong is not known, it can be extrapolated that this occurs in around 3000 to 5000 patients annually. Effective pain management is important in cancer management because it alleviates unnecessary suffering, improves morale, appetite, and not least, the quality of life of a patient. Effective ambulatory pain management reduces the need for hospitalisation and encourages home care, leading to

savings in health care expenses. In many developed countries, anaesthesiologists play an important role in treating cancer pain because of their expertise in analgesic pharmacology and procedures. We report here our experience on the cancer pain management of 702 consecutive patients under the care of the Department of Anaesthesiology, Queen Mary Hospital, Hong Kong.

Subjects and methods

All 702 adult patients referred to the Department of Anaesthesiology from various specialties for pain management from January 1992 through March 1996 were included in the present series. Despite being given potent opioid analgesics by their oncologists, these patients (418 men, 284 women) belonged to a group whose pain control was considered difficult, hence, they were referred to the Pain Management Team (PMT) of the Department of Anaesthesiology for further management. The PMT comprises four anaesthesiologists who oversee all of the Department's acute, chronic, and cancer pain management services. This team formulates pain management policy, provides patient care, conducts teaching, and carries out research activities. The PMT provides one full-time equivalent clinician for the daily running of the service. With the assistance of nursing staff and other paramedical personnel, the PMT carries out daily ward

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rounds, attends out-patient pain clinics and performs surgical procedures in the operating theatre.

Following referral, each patient underwent a pain assessment which included a detailed history-taking, physical examination, and investigations as indicated. Emphasis was placed on identifying all anatomical locations of pain, the nature, character, intensity, and aggravating or relieving factors. In addition, the patient's daily activities such as sleep pattern, appetite, functional impairment, family support, and social backgrounds were evaluated. A plan for symptomatic pain relief was then formulated for each individual patient, in liaison with other specialists. The intensity of pain, sleep pattern, and the treatment side effects of each patient were charted in a purpose-designed pain observation chart to allow for monitoring of the effectiveness of a given treatment regimen and its subsequent adjustment.

For assessing pain intensity, a zero to 10 visual analogue scale (VAS) was used.¹⁰ This assessment was made every two hours, except during sleep, for the first 48 hours or until pain relief was adequate. Subsequent assessments were carried out three times daily. The goal of our pain management was to minimise the intensity of pain and associated discomfort, and to preserve functional activities. A VAS of 3 or less was set arbitrarily because at this level most of our patients considered the pain to be mild and their sleep and daily activities were unaffected.

Most patients received systemic medications according to the recommended strategy of the World Health Organization, namely: by the oral route; by the clock and following the Analgesic Ladder. An individualised drug regimen was tailored to suit each patient's requirements. This regimen included a single or a combination of non-steroidal anti-inflammatory drugs (NSAIDs), an opioid, with or without co-analgesics such as tricyclic antidepressants (TCAs), sedatives, and anti-convulsants. These drugs were given in appropriate doses at regular intervals. The timing of administration was adjusted according to the pain observation chart so that drugs were administered prophylactically in anticipation of the occurrence of pain. If oral medications failed to control pain effectively, alternative routes of administration were considered. The most common routes used were rectal (indomethacin suppositories), transdermal (fentanyl), sublingual (buprenorphine), or parenteral, such as subcutaneous, intramuscular, or intravenous injections. These were given either as intermittent injection, continuous infusion, or via a patient-controlled analgesia (PCA) device.

In selected cases, surgical analgesic procedures such as neurolytic blockade and intraspinal analgesia were performed. The criteria for selection included failure of systemic analgesia, the nature of the malignancy, the anatomical site of the lesion, the general status of the patient, the relative risk and potential complications of the procedure, and life expectancy, as well as social factors such as familial support. Before any neurolytic nerve blockade was attempted, a diagnostic/prognostic blockade with local anaesthetic was performed to evaluate the therapeutic effect as well as associated functional debilities. For long term intraspinal catheter implantation, a temporary catheter was inserted to evaluate the analgesic efficacy, side effects, and the feasibility of the patient or family members maintaining the intraspinal analgesia.

In addition to symptomatic pain control, the prevention and adequate treatment of associated side effects were also emphasised, especially nausea, emesis, and constipation. Anti-emetics were given prophylactically, together with opioids in patients who had a history of nausea and emesis related to analgesics. The most commonly prescribed anti-emetics were metoclopramide, prochlorperazine, and haloperidol. In cases of protracted, distressing vomiting despite the above drugs, a 5-hydroxytryptamine 3 antagonist was prescribed. If constipation occurred, bulk-forming laxatives (psyllium hydrophilic muciloid) were prescribed initially. Gut stimulants (bisacodyl) were given if a bulk-forming laxative was not successful.

Results

All 702 patients in this series suffered from pain of varying degrees (VAS = 6.31 ± 2.58 , Table 1) when first seen by the PMT. Most patients had insomnia (64.5%) and anorexia was also common (53.0%). At referral, 446 patients (63.5%) had already been given potent opioid analgesics such as pethidine, morphine, or methadone by other specialties. After initial assessment, most patients were given an analgesic regimen that comprised an oral NSAID (60.0%), an opioid analgesic (93.2%), with or without co-analgesics such as TCA (30.1%), anticonvulsants (7.5%), and sedatives/hypnotics (10.8%). Only 48 (6.8%) patients did not require an opioid analgesic during our management. The oral opioids used included dihydrocodeine (58), morphine (230), and methadone (170).

The most commonly prescribed opioid was morphine in the form of a slow-release preparation of morphine sulphate (MST), given at eight- to 12-hourly intervals. The mean initial daily dose of MST was 61.3

± 45.1 mg (range, 10 to 300 mg, 212 patients). The mean maintenance dose was escalated to 76.8 ± 65.0 mg (range, 10 mg to 480 mg, 208 patients) on discharge from our care, when stable and satisfactory pain control had been achieved. Seventy-six patients received transdermal fentanyl, which became available in Hong Kong in late 1994. The most important reason for prescribing transdermal fentanyl was frequent emesis that precluded oral analgesic administration.

Fifty-nine patients (8.4%) required parenteral analgesics, because oral medications were not feasible or because their disease was already at a terminal stage. Intravenous (IV) infusion of morphine was then given at an initial dose calculated according to the patient's oral opioid requirement (oral:parenteral dose ratio = 3:1) and titrated accordingly. Some of these patients were given intravenous morphine injection through PCA, to allow for self-titration of the opioid dose. Four patients who received subcutaneous PCA morphine infusion also achieved good analgesia. The intravenous route was considered difficult in these patients because of venous access problems.

The common side effects of analgesic treatment were constipation (70.0%), nausea (16.0%), and em-

esis (10.0%), despite the fact that some of the patients had received prophylactic laxatives and anti-emetics. One hundred and five (15.0%) patients complained of somnolence. Some were improved with methylphenidate or fluoxetine administration. Thirty patients (4.3%) received diagnostic coeliac plexus blockade with local anaesthetics in this series. All had upper abdominal malignant infiltration due either to primary tumour or to metastases (Table 2). Twenty-seven subsequently received neurolytic coeliac plexus blockade (NCPB). Good pain relief was achieved in 24 (88.9%) patients after neurolytic blockade and this lasted from one week to three months. In these patients, a completely pain-free state was achieved in eight and 19 had VAS scores below three from the following day onwards. Twenty-four hours after the neurolytic procedures, we started to reduce the opioid dosage in these patients by 25% every 48 hours, until the VAS became more than three again.

Despite the success of the blockades, only eight patients had all opioids tailed off prior to discharge. Most patients still required opioid analgesics, although at reduced dosages after the neurolytic blockade. This is due to the persistence or unmasking of pain at other metastatic sites following successful blocking of the

Table 1. Primary source of malignancy and visual analogue scale of pain found on initial assessment following referral

Primary tumour site	No. of patients	VAS [†] mean (SD)
Chest: lung, oesophagus	134	6.77 (2.46)
Hepatobiliary: liver, pancreas	107	5.79 (2.42)
Lower gastrointestinal: colon, rectum	104	6.21 (2.56)
Gynaecological: cervix, ovaries, vagina	58	6.26 (2.68)
Head and neck: oral cavity, thyroid, nasopharynx	56	6.54 (2.57)
Upper gastrointestinal: stomach, cardia	55	6.04 (2.80)
Urological: bladder, prostate		
kidneys, adrenals	45	5.58 (2.88)
Breast	21	7.14 (1.96)
Haematological: leukaemia, lymphoma, myeloma	21	6.90 (2.45)
Skeletal: osteosarcoma, chondrosarcoma	12	7.08 (2.15)
Miscellaneous	39	-
Total	652*	6.31 (2.58)

* 50 patients failed to give a [†]visual analogue scale (VAS) pain score because of language problems and senility

Table 2. The different types of malignancy and neurolytic blockades performed

Type of blockade	Tumour site	No. of patients
Coeliac plexus blockade: 34 blockades in 27 patients	Carcinoma of pancreas	14
	Carcinoma of common bile duct	4
	Carcinoma of liver	3
	Carcinoma of oesophagus	2
	Carcinoma of stomach	2
	Metastatic tumour to coeliac region	2
Intercostal blockade: 30 blockades in 22 patients	Carcinoma of lung	5
	Carcinoma of oesophagus	4
	Carcinoma of colon	2
	Other malignancies	11

coeliac plexus. Four patients received repeat NCPB at three weeks to three months after a previously satisfactory block, due to pain recurrence as a result of advancing tumour infiltration and/or the regeneration of nerves. Diagnostic intercostal blockade was performed in 34 patients with rib pain. Twenty-two proceeded to neurolytic blockade with 10% phenol and 17 (77.3%) had good analgesia following the procedure. As with NCPB, most patients still required opioid medication, although at a reduced dosage.

Long term spinal catheters were implanted in five patients (four epidural, one intrathecal). These patients suffered from intractable pain that could not be controlled effectively with systemic analgesics. Preservative-free morphine sulphate was administered through an implanted injection portal, and subsequent pain control was satisfactory with this technique.

The overall VAS on discharge from the PMT care was 1.2 ± 1.9 ; 87.7% of patients had a VAS of three or less. With adequate pain relief, most patients were able to sleep (96.9%) and their appetites improved (90.7%) after the stabilisation of analgesic regimens and controlling of nausea. Two hundred and forty-three (34.7%) patients were discharged home from the care of the PMT as their families were able to take care of them reasonably well. One hundred and twenty-one (17.2%) patients were transferred to hospice care with detailed instructions on continued pain management there. Two hundred and thirty-three (33.2%) were discharged back to the referring clinician because other investigations or therapies were in progress. One hun-

dred and two (14.5%) patients died when under the care of the PMT.

On discharge from the care of the PMT, 488 patients rated their pain management as "good," 68 rated it "fair," and the remainder (146) did not comment, mostly due to communication problems as a result of their deteriorating condition.

Discussion

The importance of pain control in managing cancer patients cannot be over-emphasised. Cancer pain is special because of the progressive nature of nociceptor stimulation at multiple sites, due to tumour infiltration and metastases. In our series, most patients had multiple components of pain in which pain due to bone secondaries was the most common. Twycross and Fairfield showed in a prospective study of 100 consecutive patients that the pain in 67% of patients is due to the cancer itself³—bone and nerve compression being the most important underlying mechanism. In a similar study, Banning et al found that pain caused by tumour growth was present in 79% of patients.¹¹ Visceral involvement (37%), bone metastases (34%), soft tissue invasion (28%), and nerve/plexus pressure or infiltration (19.5%) were the most frequent causes of pain due to tumour growth. These findings are further substantiated in our series, as 252 cases (35.9%) were associated with bone pain due to tumour invasion.

For other causes of pain, 5% was due to the cancer

Table 3. Guidelines for prescribing systemic medications in cancer pain management

1. Give the drug before pain recurs
2. Give the drug regularly, rather than as needed
3. Give adequate treatment and prophylaxis for side effects
4. Adjust dosage accordingly, perform regular charting
5. Beware of changes in vital organ function due to drug elimination
6. Follow the principles of the analgesic ladder developed by WHO

treatment itself (post-operative pain was the most common), 6% related to debility (mostly constipation), and 22% of pain was due to concurrent disorders (mostly musculoskeletal in origin). The identification of an individual pain component is essential in designing an analgesic regimen, because treatments for the different components are different. It is well known that neuropathic pain due to nerve lesions is poorly controlled by opioid analgesics¹² and it is neither necessary nor effective to give strong opioids to treat myofascial pain due to immobility.³

In our series, VAS was used for assessment of pain intensity. However, pain is multidimensional, having sensory, emotional, and cognitive components. Being a one-dimensional tool, VAS may be too simple for thorough pain assessment. Also, some elderly patients or those with communication problems may not be able to understand its meaning and give a score. However, VAS is simple and useful in the busy ward setting. Our experience demonstrates that assessing VAS, together with other associated parameters such as ability to sleep, can be reliably used to assess a patient's pain.

After thorough pain assessment, a treatment plan should be formulated for each individual, with liaison with different specialties.¹³ Specific curative or palliative treatment (radiotherapy, chemotherapy, surgery) of the cancer and metastases often results in pain relief.^{14,15} Symptomatic pain treatment is a useful adjunct to anti-cancer therapy, because it may take time for the therapy to be effective. Appropriate analgesic adjustments may have to be made when the severity of pain decreases after anti-cancer therapy. Where patients are not candidates for anti-cancer therapy, symptomatic pain control becomes the mainstay of management. Initially, the goal of treatment must be defined: "com-

fort and function." Even if pain cannot be totally eliminated, a relatively pain-free patient can sleep and cope better with daily activities. Besides pain control, side effects such as drowsiness, nausea, poor appetite, and constipation must be treated because these can also be devastating to the quality of the patient's life.¹⁶ The ability to care for oneself and even to return to everyday life at home are emphasised.^{15,17}

Our main strategy for symptomatic pain treatment is to commence with an oral systemic analgesic regimen that follows the principles laid down in Tables 3 and 4. Most of these regimens include a combination of NSAID, an opioid analgesic with or without TCA, and other co-analgesics. The oral route is preferred to other routes because it is simple. No special training of the patient or their family is required and self-administration is possible in the home setting. The majority (88.6%) of our patients had effective pain control by oral medications alone until death. The choice of drug, dosage, timing of administration, and route was individualised. Since the whole cancer pain syndrome usually consists of different components (nociceptive, neuropathic, psychogenic), a specific drug combination was designed to suit each individual.^{11,18}

The choice and strategy of drug prescription normally followed the Analgesic Ladder (Table 4). This is a guideline to oral drug therapy for cancer pain designed by the WHO and the International Association for the Study of Pain aimed at improving cancer pain treatment worldwide, particularly in developing countries where sophisticated medical facilities are not widely available.¹⁹ In our experience, this regimen was effective in 80% of cases, which is compatible with the figure of 85% worldwide.^{20,21}

Most patients in our series (63.5%) had already been treated with potent analgesics such as morphine before being referred to us. Surprisingly, NSAIDs were seldom prescribed by the referring clinician, although this group of drugs is useful²² and should be tried before using potent opioids.²³ Prostaglandin is involved in nociception in many types of pain, particularly in skeletal lesions and NSAIDs, acting through their peripheral and central inhibitory action on prostaglandin synthesis, are effective in treating pain and inflammation in these situations; NSAIDs can often effectively control pain without opioids. Used in combination, NSAIDs can reduce the dosage requirement for potent opioids and hence minimise the side effects of the latter. The NSAID chosen should be of high potency,^{24,25} have a long duration of action (e.g. piroxicam, ketoprofen) and be available in formulations suitable for injection or as suppository (e.g. piroxicam, diclofenac, indomethacin).

In our series, NSAIDs were given to 421 patients (60.0%). The most common NSAIDs prescribed were ketoprofen (140) and piroxicam (120) since they are long-acting and well tolerated. However, piroxicam was stopped in one patient, because of gastrointestinal bleeding. Where patients had renal impairment, sulindac, being less toxic, was given instead. Suppository preparations such as indomethacin or diclofenac are valuable in patients who cannot tolerate oral NSAIDs, as they bypass the upper gastrointestinal tract.

Oral opioids are the mainstay in the treatment of severe cancer pain (Table 5), with morphine being the most important agent.^{26,27} With adequate dosage regimens and control of side effects, most patients can lead a relatively normal life at home before death.²⁸ Unlike some countries, the prescription of potent opioids to cancer pain patients is not seriously restricted in Hong Kong. In our series, 497 patients (70.8%) received potent opioids, either in the form of morphine or methadone. Oral morphine preparations are available in solution (syrup form) or as slow/sustained-release preparations such as MST.^{13,29} Most of the 212 patients in our series who received MST initially achieved stable pain relief within 48 hours. Morphine in this form has a long duration of action, so frequent administration is not necessary. Although it has been recommended that a 12-hourly administration regimen is adequate for pain relief, most of our patients received an eight-hourly regimen. It is our experience, as well as others,²⁹ that an eight-hourly interval achieves a better analgesic effect, as many of our patients complained of pain recurrence at eight to 10 hours after the last dose of MST.

In patients with enteral absorption problems due to gastrointestinal pathologies such as fistulae or short bowels, where there is insufficient transit time for MST to be fully absorbed, morphine syrup is an alternative. Its duration of action, however, is shorter (four hours), so it has to be given more frequently. The most common side effects of opioid analgesics were constipation (70.0%) and nausea (16.0%), respectively, in our series. It is essential to treat these side effects, sometimes prophylactically. Inadequate pain relief may ensue due to severe vomiting leading to poor enteral drug absorption.

Tricyclic antidepressants such as amitriptyline were specifically prescribed for neuropathic pain (30.1% of patients). Since neuropathic pain is notoriously resistant to opioid analgesics, failure to identify this component will result in a poor quality of analgesia. The analgesic actions of TCAs are independent of the anti-

depression effect.^{30,31} These also have other beneficial effects: antidepressant (at higher doses), hypnosis, sedation, and potentiation of morphine by increasing the latter's bioavailability. The onset of analgesic action of TCAs usually takes several days.

Other neural drugs commonly prescribed were membrane stabilisers, including anticonvulsants (sodium valproate, carbamazepine) and local anaesthetic drugs (lignocaine, mexiletine). These drugs are useful for controlling spasmodic neuropathic pain with a shooting character, presumably due to episodic discharge of the unstable neural membrane of the pain pathway.³² Corticosteroids are effective in controlling pain due to spinal cord compression or raised intracranial pressure. In addition, corticosteroids also improve appetite and elevate mood, which are beneficial to the overall quality of life of the cancer patient.

Of equal importance to the choice of analgesic combinations, is the timing of analgesic administration. It is important to give medications prior to pain recurrence to provide continuous freedom from pain and decrease the need for, or rate of dose escalation. When a new analgesic regimen is prescribed for a patient, the fact that the new drug regimen takes time to be fully effective must be considered. Inadequate coverage during the transition period, or too abrupt a cessation of the old regimen before the new regimen takes effect, will result in poor pain relief and the patient may lose confidence in the treatment prescribed. One should always prescribe a supplementary analgesic on an "as needed" basis to ensure adequate coverage of breakthrough pain. The times of administration of prescribed analgesics are specified in our nursing instruction sheet, for example, MST 30 mg every eight hours at 07:00 hr, 15:00 hr, and 23:00 hr. It was commonly found that the same total daily opioid dose had already been prescribed by the referring clinician, yet analgesia was not adequate at night because all three doses were given during the daytime (08:00 hr to 20:00 hr), leaving the patient without an analgesic for 12 hours at night.

Although most cancer pain is satisfactorily control-

Table 4. The analgesic ladder in cancer pain treatment: from the World Health Organization and the International Association for the Study of Pain

Step 1.	NSAIDs ± adjuvants (co-analgesics)
Step 2.	Codeine, dextropropoxyphene (Doloxene) ± NSAIDs ± adjuvants
Step 3.	Morphine, methadone ± NSAIDs ± adjuvants

Table 5. The dosages and routes of administration of potent opioids at the time of discharge

Opioid	Route	No. of patients	Dose (mg), mean (range)
MST*	Oral	208	76.8 (10-480)
Morphine syrup	Oral	22	67.0 (25-300)
Morphine	Parenteral	59	62.5 (12-600)
Physeptone	Oral	170	20.8 (5-130)
Fentanyl	Transdermal	21	0.74 (0.6-1.8)

* MST slow-release morphine sulphate

led by oral medications, some patients require other analgesic therapies at some stage before death.²⁰ This can be due to intolerance to gastrointestinal side effects (protracted emesis), the patient being too ill to take oral drugs, or gut absorption problems. An alternative analgesia is transdermal fentanyl.³³ This is supplied in the form of a patch that allows a continuous diffusion of fentanyl to the skin to form a depot. Gradual absorption at a relatively constant rate from this skin depot achieves a stable opioid concentration that is maintained for up to 72 hours. Experience with the use of transdermal fentanyl in 76 patients showed that this technique is applicable to those patients who might otherwise need opioid injections for adequate analgesia. However, the analgesic action of transdermal fentanyl takes up to 24 hours to develop after the first application. Other forms of analgesic must be prescribed during this long onset period to ensure coverage. Also, once a skin depot is formed, the elimination half-life is long (approximately 17 hours), even after the patch is removed.³⁴

In cases of opioid overdose, the patient must be closely monitored for at least 24 hours for respiratory depression. Fifty-nine patients in our series were given parenteral opioids, with most receiving continuous intravenous morphine infusion at the terminal stage due to poor oral intake (Table 5). The initial parenteral dose can be calculated from the patient's oral morphine requirement. A range of infusion rates was prescribed for nursing staff to titrate against monitored pain level and respiratory rate.

Wang et al first described the use of spinal morphine in cancer pain management in 1979,³⁵ since when spinal opioid administration has become popular.^{36,37} Implantable long term epidural or intrathecal catheters with injection ports, either totally implantable or tunneled under the skin to convenient sites, are commercially available.^{38,39} Excellent analgesia can be achieved

with small doses of spinal opioid—10% and 1% of oral systemic opioid dose for epidural and intrathecal routes, respectively. With this small dose, systemic side effects such as sedation can be minimised. Since adequate logistical support and proper training of the patient and relatives are essential, this technique was reserved in our centre only for those patients whose pain was poorly controlled with large doses of opioids and with reasonable general conditions that can be managed adequately at home. With better development of logistical support (community nursing services), it can be anticipated that this technique will be more widely employed in Hong Kong.

Neurolytic blockades are very useful in pain management if technically feasible.⁴⁰ In our series, the most common neurolytic analgesic procedures were NCPB and intercostal blockades. It has been advocated that in suitable patients one should perform these blockades early, even before trying oral analgesics.⁴¹ The former blockade is effective in upper abdominal malignancies that infiltrate the coeliac plexus, particularly pancreatic carcinoma—a satisfactory response was seen in 70% to 80% of patients after inducing blockade, and in 60% to 75% in the terminal stage, just prior to death.⁴²⁻⁴⁵ Twenty-seven patients in our series received NCPB (Table 2) and adequate initial analgesia was achieved in 24 (88.9%). These 24 patients had satisfactory analgesia within 36 hours of the procedure and their opioid analgesics were either tailed off or the dose decreased by at least 50% by the end of one week. The procedure was performed under image intensifier control and we used 20G 15 cm disposable spinal needles.

The coeliac blockade was always preceded by a diagnostic/prognostic blockade using local anaesthetics at least 24 hours previously to ensure adequate evaluation. Prognostic blockades were performed with bupivacaine (0.25%), 20 ml injected to the left and 20

ml to the right side. If a good result was achieved, NPCB was performed using the same technique, but with a mixture of alcohol (50%) and bupivacaine (0.25%). The most common complication of NCPB is hypotension in the immediate post-operative period, due to sympathetic blockage. This is further aggravated by pre-existing hypovolaemia as a result of poor oral intake and general cachexia in cancer patients. Adequate fluid loading and ephedrine are essential in such cases. In the following few days, postural hypotension frequently occurred, and usually disappeared after one week.

The pain relief obtained with intercostal nerve blockades, however, was not as good as that achieved with NCPB, since multiple metastases usually occur in these patients and pain at other sites was frequently unmasked after an otherwise successful neurolysis of the intercostal nerve. Neurolytic intercostal blockade is technically more difficult to perform than the ordinary intercostal blockade in non-cancer patients, because the ribs may be eroded or anatomically distorted by tumour. Generally speaking, it is uncommon for patients to have their opioid analgesics completely tailed off after a neurolytic intercostal blockade. Nevertheless, neurolytic blockades allow patients to have good quality analgesia with a lower dosage of opioid analgesics, so the patient can be less affected by systemic side effects.

Conclusion

It should be emphasised that most cancer pain can be managed satisfactorily by simple oral analgesics. The key to success includes careful patient assessment and customisation of the type, dosage, and timing of medications to be given to each patient. Equally important is adequate prophylaxis and treatment of complications.

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