Basic Principles in the Management of Pain

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No issue devoted to the topic of pain would be complete without a brief survey of current management principles for the two clinical classes of pain, acute and chronic. Pain of less than 3 to 6 months' duration may generally be regarded as acute, whereas once it has existed for longer periods it is considered to be chronic in nature[6]. This classification is of clinical importance because basic management principles for acute and chronic pain differ significantly[1,6,14].

Table 1: Principles in the management of acute pain

1. Diagnose and treat underlying cause.
2. Use drugs which are most appropriate not only for the severity but also for the type of pain encountered.
3. Include non-invasive adjunctive measures such as heat, ice, manipulative therapy, splinting, etc. to augment pain relief when appropriate.
4. Follow a plan and prevent the development of chronic pain in the acute stage.

Acute pain

Acute pain is usually due to a readily apparent nociceptor stimulus (eg tissue damage due to disease, accidental injury, or surgery). Principles underlying the management of acute pain are summarized in Table 1.

The first requirement is that the precipitating cause of acute pain should be treated appropriately, medically or surgically, after which the pain will usually be self-limiting and can easily be managed with currently available analgesics and other supportive measures. However, if not appropriately treated, acute pain may produce serious abnormal physiological and psychological reactions, which can cause complications that may prolong disability and result in chronic pain, and sometimes even death.

Analgesic therapy

Severe pain: Parenteral narcotic agonists such as morphine are most useful for controlling sudden, severe pain encountered in such disorders as acute myocardial infarction, renal calculi, an obstructed hollow viscus, or nerve-root or spinal cord compression. At equi-analgesic doses, there are only minor clinical differences in the actions and side effects of the various agents available. However, the patient's physical state and exposure to narcotics in the immediate past can affect the analgesic and the relative potency of any of these drugs[3,5,12,16].

The narcotic agonist-antagonist class of analgesics such as pentazocine and butorphanol is also very effective in relieving episodes of acute pain[3,12,16]. However, caution must be exercised in prescribing these drugs to patients who have already been receiving narcotic agonists, since withdrawal symptoms may be precipitated in physically dependent patients. While narcotic agonist-antagonist drugs are believed to have a lower abuse potential and to produce less respiratory depression, they may cause disturbing psychotomimetic reactions and other central nervous system side effects such as dizziness.

Mild to moderate pain: Oral analgesics are preferred for patients with mild to moderate pain, particularly those who are ambulatory and have no difficulty in taking medication by mouth[6,12]. Oral analgesics can be classified into two main groups[12]: 1. peripherally acting agents such as acetylsalicylic acid (ASA), acetaminophen, and the newer non-steroidal anti-inflammatory/analgesic agents; 2. centrally acting agents such as the narcotic agonists, codeine and propoxyphene, and the narcotic agonist-antagonist group such as pentazocine and butorphanol.

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ASA is generally regarded as one of the standards against which other oral analgesics are compared[12]. Increasing the dosage of ASA not only enhances pain relief but also lengthens the duration of analgesic effect.

Non-steroidal anti-inflammatory/analgesic drugs also have been found to be orally effective, well tolerated, non-narcotic, antipyretic analgesics[5,7,12,16,19,20,22]. In single-dose clinical trials they have shown a plateau effect beyond which increasing amounts produce little or no additional pain relief. Some of the newer agents in this group and their chemical classification can be found in Table 2.

Table 2: Newer non-steroidal anti-inflammatory analgesics

Class	*Examples*
Pyrroles	zomepirac
Proprionic acids	naproxen, fenoprofen, ibuprofen
Pyrazolons	apazone (azapropazone)
Phenylacetic acids	diclofenac
Quinazolinones	proquazone, fluproquazone
Indenes	suldinac
Arylindoles	fendosal
Fenamates	flufenamic acid

Available evidence suggests that some of these agents, particularly zomepirac and naproxen, may be superior in analgesic efficacy, longer acting, and less ulcerogenic than usual doses of ASA[7,19,20,22]. However, further studies are needed before the analgesic activity (eg onset, peak, and duration) and side effects of one compound can be positioned with another and with ASA.

Peripherally acting non-narcotic agents are usually to be preferred to centrally acting narcotic analgesics in patients for whom oral medication is indicated and who have no contraindication[6,12]. The peripherally acting non-narcotic analgesics usually produce comparable pain relief and fewer undesirable central nervous system side effects. However, ASA and other non-steroidal anti-inflammatory analgesics affect platelet function and the gastrointestinal tract and may mask fever. Some centrally acting narcotic analgesics have a certain abuse potential and others tend to be less predictable in effect when given orally.

Enhancement of analgesic effect may be obtained by combining drugs with different sites of action, eg a peripheral plus a central agent[12,16]. In patients who cannot tolerate the usual dose of a narcotic analgesic, appropriate combination therapy can reduce the amount of centrally acting drug required for additional analgesia and thus decrease the incidence of central adverse reactions.

Other therapeutic measures

Nerve blocks are reported to be effective in many patients with acute pain[4,8,11]. The best candidates for therapeutic nerve blocks are those with known or inferred organic disease, minimal psychological or behavioral problems, and clinical evidence of sympathetic or somatic pain mechanisms. Nerve blocks effectively relieve pain, sometimes for long periods in cases of bursitis, occipital pain caused by osteoarthritis, low back pain due to degenerative disc disease, reflex sympathetic dystrophy, acute strains or sprains, or fractures.

Reliance on placebos, whether deliberate or not, was commonplace before the age of modern analgesics. As far back as the time of ancient Greek medicine, physicians recognized that the priceless ingredient in every medication is the faith the patient puts into it. In controlled studies of postoperative and cancer pain, placebo is reported to be effective in a substantial percentage of patients (eg 30%)[21]. Thus, the response to placebo in acute pain should not be interpreted to mean the patient has 'psychogenic' pain. While placebo has been advocated as a therapeutic measure in at least some patients with acute pain[9], it may cause more harm than good if the patient is disturbed by finding out and loses confidence in further treatment and in the physician[10].

Preventing the development of chronic pain

In order to prevent at the acute stage the possible development of chronic pain, a certain strategy must be followed[10].

First, it is important to determine whether or not the acute pain has the potential to become a chronic pain problem. Life problems which may be contributing factors need to be evaluated and resolved whenever possible. Evidence in the history and physical examination which may suggest drug or alcohol abuse should be taken into consideration. Possible

underlying causes or other physical contributing factors such as poor muscle tone or postural stress need to be corrected by physical training.

Second, the physician should set a reasonable time limit for the satisfactory treatment of the acute pain condition with respect to the underlying disease process, and let the patient know when medication will no longer be needed and can be discontinued. The patient's thinking should be oriented in terms of a graded return to full activity on a prescribed schedule. Return visits should be at specified time intervals so that the patient does not need to justify a visit.

Third, non-addicting analgesics should be employed in lieu of addicting agents whenever possible, as long as satisfactory pain relief can be obtained. Analgesics should be prescribed at high enough dosages to ensure satisfactory pain relief and keep the patient comfortable so that he does not have to ask for medication. Addictive medication should be tapered off as rapidly as possible and discontinued at the end of the prescribed time limit. One should make certain that the dose of analgesic given is effective before giving a second agent, which may have a potentiating effect, for sedation.

Fourth, non-invasive adjunctive measures should be used to replace or augment analgesics when appropriate. Such measures may be particularly helpful, for example, in relieving musculoskeletal pain (eg heat, ice, physical therapy) and headache (eg relaxation therapy and biofeedback).

Fifth, increase in medication consumption and decrease in patient activity at a time when the patient should be feeling better should alert the physician to the possibility of chronicity. If this occurs, the physician must re-evaluate the situation and take appropriate action.

Chronic pain

Chronic pain may be classified clinically into treatable and intractable varieties[1, 4, 6, 10, 11, 13, 15, 18].

As with acute pain, treatable pain due to organic disease is best managed by effectively treating the underlying disorder, eg steroids for temporal arteritis headache, gold salts for severe rheumatoid arthritis, beta-blockers or by-pass surgery for angina pectoris, etc[6]. Intractable chronic pain, on the other hand, requires a different approach[1, 2, 10, 11, 13, 15, 17, 18].

Chronic intractable pain may be due to concealed medical disease, psychiatric illness, neurological disorders, unknown etiology[1]. The types of intractable pain most often encountered can be found in Table 3.

Table 3: Some of the most common causes of chronic intractable pain

Concealed medical
carcinomatosis, invasion/compression syndromes due to cancer
Mental illness
depression, hysteria, compensation neurosis
Neurologic disorders
neuralgias (trigeminal, glossopharyngeal, and post-herpetic), reflex sympathetic dystrophies, phantom limb pain, nerve entrapment syndromes, spinal arachnoiditis or cord damage, myofascial syndromes
Unknown etiology
chronic intractable benign pain syndrome

Chronic pain of determinate cause

Carcinomatosis is probably the most frequent cause of chronic intractable pain due to concealed medical disease[1]. Osseous metastasis, invasion of retroperitoneal tissues, and involvement of nerves of the brachial or lumbosacral plexuses may be very painful, and the origin of the pain may be obscure for a long time. Often radiation therapy and other medical and surgical measures do not relieve pain satisfactorily. In such instances, the physician must decide whether to use analgesics in sufficient quantity to produce satisfactory pain relief. In cancer patients, both oral and parenteral narcotic drugs may have to be given in higher than usual doses because of tolerance. If analgesic therapy fails, the physician may have to resort to neurosurgical or chemical destruction of pain-sensitive or pain-conducting pathways.

Mental illness is a common cause of chronic intractable pain[1, 10, 18]. While it is not unusual for patients suffering from chronic depression to have pain as the predominant symptom, almost all patients suffering from chronic pain become depressed. Thus, the physician is commonly faced with the difficult task of determining whether depression is primary or secondary. Antidepressants are useful not only in relieving intractable pain and depression but also in tapering off treatment with sedative hypnotics and narcotics[2, 10].

Chronic hysteria and compensation neurosis may also be associated with intractable pain[1]. Such cases are among the most difficult to manage and psychotherapy should probably be considered in most instances.

Certain neurologic chronic intractable pains appear to be responsive to the administration of anticonvulsant medication. Carbamazine appears to be effective in some cases in relieving the pain of trigeminal neuralgia, glossopharyngeal neuralgia, and the lightning pains of tabes, post-herpetic neuralgia, phantom limb syndrome, and atypical facial pain[2, 6, 10]. The use of an antidepressant alone or in combination with a phenothiazine major tranquilizer also appears to offer more promise in controlling pain due to neurologic disease than do surgical or chemical procedures which increase the sensory deficit[2, 10]. Therapeutic nerve blocks can occasionally be useful in some patients with chronic neurologic disorder pain, namely: causalgia and other reflex sympathetic dystrophies, post-herpetic neuralgia, chronic myofascial syndromes, chronic back pain with nerve-root irritation, and post-traumatic neuralgias[11].

Chronic intractable benign pain

The most difficult group of all to manage are the chronic intractable benign pains of indeterminate cause[1, 2, 10, 13, 15, 18]. These include intractable pains in the thorax, abdomen, face, or other parts of the body, for which an organic etiology cannot be demonstrated, all neurologic causes have been excluded, and the findings cannot be ascribed to any known psychiatric disorder. While no discernible, treatable cause can be identified in the overwhelming majority of these patients, no matter what diagnostic methods are employed, it is still important for the physician to maintain a high index of suspicion, since a treatable cause (eg carcinomatosis) may later be identified in an occasional case[13].

Chronic intractable benign pain is different from other forms of pain[10, 13, 15, 18]. Nociceptive input—the major factor in pain due to medical and surgical causes—is absent in patients with chronic intractable benign pain. While medical and surgical pain can be satisfactorily relieved by analgesics, chronic intractable benign pain cannot. This leads to continuing suffering and disability, and the learned pain behaviors of taking pills, becoming disabled and unemployed, always talking about pain, and going to the doctor and the hospital frequently for relief. Once established, chronic pain behavior may perpetuate itself through environmental factors unrelated to the continuing existence of suffering, pain, or nociception.

Patients with chronic intractable benign pain have usually had their pain for years, seen a number of physicians, and undergone many diagnostic procedures and therapies. Unfortunately, in spite of all that is currently known and written about pain, there just is no satisfactory way of helping all such patients and, as a result, many are not treated successfully anywhere. Thus, patients with chronic intractable benign pain present a real challenge to any physician and, indeed, in view of the prolonged suffering endured by these patients, the continued use of the term 'benign' to characterize such pain states is questionable.

Management of chronic intractable benign pain

The recent development of multidisciplinary pain clinics in several parts of the world now appears to offer a promising new approach for determining the most effective means of managing patients with 'chronic intractable benign pain'.

Table 4: Basic principles in the management of chronic intractable benign pain

1. Recognize the problem.
2. Adopt 'primum non nocere' as the guiding principle.
3. Be compassionate, accept the patient's pain as real and likely to continue.
4. Set realistic therapeutic goals.
5. Involve the patient and family members in the management of the problem.
6. Focus on the patient's activity and not his complaints about pain.
7. Taper off analgesics completely and base prescription of other medication on need.
8. Encourage and expect success.
9. Employ adjunctive measures such as physical and occupational therapy, hypnosis and self-hypnosis, behavior therapy, biofeedback, transcutaneous nerve stimulation, acupuncture, and nerve block when indicated.
10. Consider surgical intervention only when all else fails.

For proper management of patients with chronic intractable benign pain, the physician needs to recognize the problem and the professional pain patient and to follow certain basic principles[1, 6, 10, 13, 15, 18]. These are outlined in Table 4.

Once the problem has been recognized, the guiding management principle should be primum non nocere (first of all, do no harm).

The physician must be compassionate and believe what the patient says about the pain, accepting it as real, and find out why the patient hurts – not whether he or she hurts. Both the patient and the physician should accept some degree of continuing pain.

Realistic therapeutic goals must be set. Many patients are already addicted to opiates and detoxification must be undertaken. The principal goals are to taper off narcotics completely, decrease other medication, increase activity, change pain behavior, protect the patient from further invasive diagnostic testing and surgery, and expect to treat and manage but not cure the patient. It is often helpful to work out a written contract with the patient whereby specific goals are achieved in a prescribed time frame.

The patient and also other family members should be involved in the management of the pain problem. Family members should be instructed to encourage the patient to decrease medication and increase activity and pleasurable pursuits systematically by the achievement of progressive realistic objectives, coupled with positive reinforcement of success.

Drug therapy should be based primarily on the level and type of pain. Appropriate psychotherapeutic agents may be given to relieve depression, eliminate sleep disturbances, increase interest in the environment and activity, and detoxify the patient. It is important to bear in mind that while psychotherapeutic drugs may be effective in managing chronic intractable benign pain, analgesics are not.

Other adjunctive measures which may be useful should be included in the therapeutic program when indicated[2, 6, 10, 17]. Physical and occupational therapy, hypnosis and self-hypnosis, behavior therapy, and biofeedback are reported to be useful in controlling some forms of chronic intractable benign pain. The merits of transcutaneous electrical nerve stimulation and acupuncture remain to be established in well-controlled trials. Nerve blocks are considered to be useful in only a small minority of cases[4, 11].

Surgery is almost never indicated and thus should be considered only as a last resort – when all else fails and the patient can no longer tolerate the pain.

Conclusion

Recent years have seen the establishment in several parts of the world of pain clinics in which specialists from all the different disciplines involved can work together as a team to determine the most effective therapy for the individual patient. Particular efforts are being directed to the management of intractable pain of indeterminate origin and to the successful control of terminal pain in cancer. The effectiveness of varying combinations of therapeutic procedures in previously intractable cases suggests the need for greater numbers of such clinics.

At the same time, basic research has been stimulated by the discovery of stereoscopic opiate receptors in the nervous system and the identification of endogenous opioid peptides (endorphins). This work offers the hope of both a better understanding of pain and pain-modulating mechanisms and the possibility of developing more effective means of controlling pain, either by permitting the use of endogenous opioid peptide analogs or by the activation of endorphin release.

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