

Recent Advances in Surgery

Edited by **Selwyn Taylor**

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Preface

Once again I have been invited to edit *Recent Advances in Surgery* and once again I have thoroughly enjoyed the challenge. Surgery is always changing and it is impossible to foresee just where the next breakthrough is likely to occur. Thus there is little to connect the titles of the chapters in this edition with the last volume, or indeed with the previous three.

There are, as usual, some unfamiliar titles and fiberduodenoscopy is one of these and earns a place in the list of contents. Cryosurgery is finding many new applications and as Professor Poswillo shows, nowhere so successfully as in the mouth. The relief of pain is fundamental in all medical practice and the new techniques which are described in the first chapter will, I am sure, come as a surprise to many readers.

Epidemiology is a remarkable tool, especially in the hands of Denis Burkitt, when he reviews patterns of disease in the large bowel in many parts of the world. His further conclusions will be found to be thought-provoking by most people and whether they agree or not, will have stimulated a fresh look. In similar vein, Dr Barry Lewis' biochemical approach to the aetiology of vascular disease is a new way of tackling an old problem, while Peter Martin and Adrian Marston bring the surgical attack on blood vessels up to date.

Many important general subjects have been brought up to date in this edition and there are few of us who will not welcome the practical details which Dr Darrell provides on the use of antibiotics. There are excellent reviews of such important general subjects as gastric secretion, ulcerative colitis and piles. Transplantation, as usual, finds a place and lung transplantation is a new variant, while

Professor Shackman and his colleagues take a long look at the complications which have beset renal transplantation.

In these days of civil unrest and sudden violence, which crops up unexpectedly in every corner of the globe, a knowledge of war-time surgery is extremely useful. In Northern Ireland the staff of the Royal Victoria Infirmary in Belfast have a unique experience in this field and their contribution, very much a co-operative one from many departments, makes fascinating reading if a little saddening. The intensive care unit, which has become such a feature of the modern hospital, is thoroughly presented, as is that difficult problem of shock. Orthopaedics is represented by replacement of the knee joint and the endocrine system by the parathyroid which has latterly come into its own. Finally, the chapter on biopsy is extraordinarily important and I shall not be surprised if many readers turn to it first.

So many friends and colleagues have helped in the production of this book, from suggestions in the first place, to correction of proofs in the last, that it would be impossible to thank them all. I am particularly grateful to my assistant Mr Niall O'Higgins who has helped with the book at every stage and to Miss Pauline Allison who has shouldered the extra burden so cheerfully.

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Relief of pain

The growing interest in the problems connected with the relief of intractable pain is shown by the increasing but slow growth of centres specializing in this type of work. Such centres take either of two forms. In one, the patient having been investigated thoroughly at medical, surgical or other clinics, is referred for diagnostic nerve blocks, drug therapy or active treatment such as injection of alcohol or phenol. This type of clinic is usually under the active control of one specialist. The second type is the multidisciplinary clinic in which the patient is assessed by a group of specialists often including a surgeon, a physician, a psychiatrist, a neurologist, a neurosurgeon, and an anaesthetist. The groups consider together the problem in hand and then suggest treatment, the patient being treated by the appropriate specialist.

In the main, pain relief clinics are of the first type owing to problems inherent in the second of arranging for groups of interested specialists to meet together regularly. There are, however, a few well-known group clinics that have continued over many years.

Progress in this field is slow. The new 'gate control' theory of pain, proposed by Melzack and Wall (1965) and subsequently elaborated by them, helps to explain some of the mechanisms of chronic intractable pain and has suggested new methods of attack on this problem. We are beginning to see evidence of the practical application of this theory, such as the method of dorsal column stimulation mentioned later. The widely held view that, in order to provide effective relief, the nervous pathway must be interrupted at some point between the pain-exciting lesion and the central nervous system has long been known to be inadequate because, despite such interruption, treatment failures occur with depressing frequency. Kibler and Nathan demonstrated as long ago as 1960 that it was possible in some patients to relieve pain and paraesthesiae by blocking the appropriate nerves distal to the site of the lesion. Morgan and Robson (1972) presented a case report confirming this finding which suggests in the light of modern theory that some types of pain and of painful muscle spasm arise from the combination of

large nerve fibre damage and uncontrolled activity of small nerve fibres.

Methods of relieving pain by ablating portions of the thalamic nuclei are available at only very few centres and the results are equivocal. Percutaneous electrical cordotomy, probably the most useful method in the intractable pain of cancer, is only widely available in North America, few centres in England being as yet equipped to undertake the procedure.

Unfortunately for the vast majority of sufferers of pain of non-malignant origin, the likelihood of relief is small despite intensive clinical and laboratory research. Consideration, for example, of chronic low backache in women, postherpetic neuralgia, and rheumatoid arthritis, reveals the vast field of unsatisfied and untreatable chronic pain. Whilst, as in these examples, a name can be given to the collection of symptoms and associated signs, such is the infinite variation in types of chronic pain that in a great many others no satisfying diagnosis can be reached or substantial help given. Once pain of this type has passed beyond relief by simple non-habit forming analgesics, there is only too often no pharmacological therapy that can help, although a sensible and consistent regimen of analgesic drugs can sometimes ameliorate suffering.

Patients with chronic pain are not popular with their doctor, their relatives, or the nursing staff. Doctors are expected to be able to relieve pain and suffering. If, after treatment of various kinds, the patient still complains of pain, then he is emphasizing that the doctor is not a very good doctor. This is not an agreeable state of affairs yet this facet of our nature must be recognized when dealing with these patients and their problems.

Whatever future possibilities may be envisaged, the present contribution represents an endeavour to summarize the current position. In consequence the major concern is with cancer pain, concerning the management of which some advances can be recorded. No attempt is made to describe advances made in fields properly belonging to other medical specialties or to refer to conditions in which it has seemed to the authors that negligible progress has been made.

Each group of workers is acquainted with a different cross-section of the chronic pain problem. Inevitably therefore this account reflects that cross-section with which the writers are familiar.

PAIN CAUSED BY MALIGNANCY

Incurable malignant disease is, fortunately, not inevitably associated with severe pain. Saunders (1967) has noted that individual opinions vary widely concerning the incidence of intractable pain in terminal cancer. The experience of those offering special facilities for these patients suggests that severe and intractable pain

is more common than is often appreciated by consultants in hospital practice. The experience of one of the authors (S.L.) supports this view. Since he began to offer percutaneous electrical cordotomy as a method of treatment, the number of patients referred for treatment of malignant pain has increased by several hundred per cent. This can be taken to imply that in the absence of a proportionate increase in the incidence of malignant disease in the geographical area served, then the previously available facilities and range of treatments were inadequate to satisfy the demand for relief.

Bonica (1954a) has classified the causes of cancer pain as follows:

1. Compression by tumour, or in pathological fracture by bone, of nerves resulting in sharp, well-localized projected neuralgic pain.
2. Infiltration by tumour of nerves and blood vessels resulting in perivascular and perineural lymphangitis, and irritation of sensory nerve endings and burning diffuse pain — sympathetic pain.
3. Visceral (gastrointestinal or genitourinary) obstruction giving dull diffuse visceral pain.
4. Vascular obstruction by tumour giving ischaemic or venous engorgement pain.
5. Tension caused by tumour infiltration in tissues invested closely by fascia, periosteum or other pain-sensitive structures.
6. Necrosis, infection and inflammation in pain-sensitive structures produced by the tumour.

Bonica also noted, as have others previously, that pain does not appear in most cases until the lesion is incurable.

In practice there are two basic situations. Intractable pain may, or may not, be accompanied by objective evidence that malignant disease is the cause. In the former case, which may be typified by carcinoma of the lung giving rise to the Pancoast syndrome, there need be no hesitation, if the severity of the pain warrants it, in proceeding to use powerful analgesic drugs and to consider such methods as nerve block using neurolytic substances, or cordotomy.

If, on the other hand, objective evidence is not available then adequate treatment of pain is likely to be delayed for many months until the confirmatory evidence is obtained, on the grounds that the risk of drug addiction, or of sensory or motor loss associated with some form of nerve block, are unjustifiable. It is the authors' view that in many patients malignancy can be diagnosed as the cause of pain before objective evidence is obtained, and that suitable treatment can and should then be undertaken.

Examples of diagnostic problems

1. Prolonged and thorough investigation of a patient suffering from steadily worsening pain commonly fails to reveal the cause. Perese (1961) reviewing over seven hundred cases of malignancy,

reported that some 12 per cent of patients complaining of pain fell into this category and remarked on the tendency, in these circumstances, to attach a diagnosis of 'pain of psychosomatic origin' to the patients' complaints. Carcinoma of the body or tail of the pancreas provide examples of causes of persistent pain that may elude diagnosis for a considerable period. In the meantime, pain which is often severe may be treated by means that are inappropriate and ineffective.

2. After apparently successful treatment of a primary growth, and in the absence of evidence of spread, there may be complaint of persistent pain in the same general area. The question arises, 'Is this pain caused by spread of disease or not, and if spread cannot be demonstrated should pain be treated as if it had?'

Common examples are provided by patients with carcinoma of the bladder or rectum. In the latter disease other types of pain which are easily confused with that of malignant origin include the gradual development of pelvic abscess, and sharp superficial pain and tenderness localized to the perineal scar. Complaint of painful phantom rectum is rare. The importance of differentiation of the cause of pain is considerable; abscess is easily dealt with, once recognised, and drainage leads to great relief of pain, although pain of malignant origin may well co-exist. In this instance subarachnoid injection of phenol or alcohol is inappropriate in the treatment of pain caused by infection. The neuritic type of pain can sometimes be effectively treated by caudal injection of local anaesthetics, whereas subarachnoid injection of phenol is not only ineffective but carries the risk of disturbing bladder function. Thus it is of some considerable importance to identify the type of pain. Persistent mild pain that is slowly extending and worsening, but is unaccompanied by significant objective findings is ominous.

3. There are many instances in which, after treatment of a primary growth which does not appear to have spread, pain is complained of in an area remote from the site of the primary growth and is not accompanied by evidence to suggest that spread accounts for the pain.

One of two attitudes is adopted at this juncture. It can be said that because nothing has been found to substantiate the possibility that pain has a malignant cause, treatment of a type appropriate in cancer is unjustifiable until clear evidence is discovered. An alternative view is that because the patient has had treatment for a proven cancer, any persistent pain suffered thereafter is, in all probability, a manifestation of secondary spread and therefore the proper course is to treat the pain as if it were malignant in origin.

Adoption of the first view condemns the patient needlessly, very often to weeks or months of inadequate relief, whereas adoption of the second view can too easily lead to unnecessary and inappropriate

treatment. It is sometimes forgotten that cancer patients can be afflicted by pains of non-malignant origin and here again there is the risk of advising a potentially damaging form of treatment when it is not necessary.

4. The possibility of late recurrence of cancer may be overlooked when attempting to establish the cause of persistent pain if apparently successful treatment of a primary growth has taken place many years previously. Radiographic evidence of bone erosion often does not appear for a considerable time after first complaint of pain, and there may also be differences of opinion regarding the interpretation of radiographs. Although it is well recognized that carcinoma of the rectum or breast may not recur for many years, the same is true also of carcinoma of the cervix.

5. Change in the character of pain is a rare cause of diagnostic confusion. Difficulty may, however, arise when pain of malignant type is superimposed on a well-established scar pain such as may follow thoracotomy. If, now, pain of malignant type develops in the same general area, a considerable period of time may elapse before it is appreciated that there are two components to the pain. One of these is the sharply localized pain which does not generally worsen and is not amenable to analgesic drug therapy, whereas the second is dull, aching and deep-seated in character and is persistent and worsening.

RECOGNITION OF CANCER PAIN

The management of cancer pain presents problems that differ substantially from those related to the treatment of other chronic pains. Despite an extensive literature on the clinical and laboratory investigation of chronic pain of all types, it is regrettably true that, cancer excepted, the outlook for the majority of sufferers is in general little changed. In cancer, however, pain which is only one aspect of the mental and physical distress suffered by the patient, and not necessarily the most important, can often be relieved greatly for the remaining period of life. For this reason it is fundamentally necessary to appreciate that if suitable treatment is withheld until objective evidence of cancer as the cause of pain is awaited, then it will often be needlessly delayed. It is a matter of some consequence to recognize the common characteristics of cancer pain so that, if present, further investigations are undertaken if a primary focus of malignancy has not already been discovered or, if it has, to continue to seek evidence of secondary spread. Although the life expectation may very well not be influenced by verification of cancer as the cause of pain, the attitude to management of pain itself is, when an acceptable explanation is revealed.

Time and patience are required to obtain a useful description of

pain and its characteristics in an individual patient. Semantic difficulties abound — one patient's 'agony' is another's 'discomfort'.

Cancer pain can take many forms, especially at a late stage, and may appear to decline in severity near the end. Nevertheless several features are present at a relatively early stage with considerable consistency.

Pain arises and stays in the same area of the body usually for the rest of the patient's life. Exceptionally this is not so. Carcinoma of the prostate and of the reticuloendothelial system may be associated with episodes of pain lasting several days or weeks, after which pain at this site declines only to reappear elsewhere.

In the absence of treatment directed towards its relief, pain becomes progressively more severe. Over a period of perhaps a month a perceptible worsening is reported. In contrast, many other forms of chronic pain persist for years without substantial change in severity.

The area over which pain is felt gradually extends. It is usually reported to be felt deeply rather than superficially. A notable exception, however, is in pain associated with carcinoma of the lung leading to Pancoast syndrome when the superficial component of pain may be very marked. In this instance, however, the diagnosis is not often in doubt. The character of pain is commonly described as 'aching, boring and nagging'. From an early stage in its development pain is continuous and the patient is never wholly free from it. It is characteristic that analgesic drugs, including those classified as 'mild', provide a measure of relief and much reliance is placed upon them. Typically pain awakens the patient from his sleep. He finds it necessary to take analgesics before retiring for the night and is awakened by pain a few hours later. A further dose of analgesic drug is then taken and after about half-an-hour the pain wanes as the drug takes effect and he returns to sleep. The view that analgesic drugs are 'pain-killers' in the sense that they are effective in all forms of acute or chronic pain is quite incorrect in practice. These drugs are of small value in most other forms of chronic pain and their effectiveness in cancer is an important diagnostic point. It may be remarked that if analgesics were effective in other forms of chronic pain, then the general problem of the management of patients complaining of chronic pain would be of much reduced dimensions.

Although pain caused by cancer is continuous there may be exacerbations lasting hours rather than minutes. Dramatic relief of pain is not obtained by rest, although aggravation is often noted after bodily activity previously well within the patient's ability, or after an ambulance journey. The application of a hot water bottle or the assumption of a particular posture is often reported as helpful.

A striking feature discernible in patients who have suffered severe cancer pain for several weeks or months is the progressive demoral-