Low back pain

– It doesn't need to be a pain in the butt

James Watt, MRCP FAFMM

James Watt was previously deputy chair of the College Council and chairman of the College's education committee. He has specialised in musculoskeletal medicine and now practices full time in that field. He holds an appointment as musculoskeletal physician at North Shore Hospital.

Most low back pain gets better.

So states the ACC evidence based guideline on the management of low back pain.[1] Positive confident informed support with no other intervention is associated with a good outcome.[2] Were you a betting person you would realise that it would be wise to stay involved and pick up the kudos while nature does the work but gets no acknowledgement.

Most low back pain presents in general practice and can be managed by the GP.

What then do you do? Evidence for doing anything is dubious. EBM practitioners, were they truly committed to their evidence, would not bother examining their patients. Their medico-legal bills may climb, and patient satisfaction would not be high, but there really is barely any evidence to support getting out of your chair.

Having said that, I still believe that there *are* large numbers of things that you can do to help your patient manage their pain.

Why is the evidence marginal

One possibility is that many patients with back pain will seek help from various practitioners before finding someone who can help (or they get better spontaneously). Were the evidence to be taken from any of those practitioners who were unable to help initially, this evidence would be negative. Only the evidence taken from the practitioner who was helping at the time of resolution, would be positive.

Enlist the patient's help

The simplest and most effective way of managing the complex problem of low back pain is to provide your patient with sufficient information for them to make the choices appropriate to their particular belief system and to guide them through the conundrum. They will always make the right choice – their choice.

Handy tips

This is a list of points that may be useful in helping you manage your patient with back pain.

- The pelvis is a ring consisting of three bones joined by flexible fibrous ligaments. It can twist and be sprained, causing pain. Each bone can move in any direction between the other two like the links in a chain. This will result in a twist of the sacroiliac joints and strain of their associated ligaments.
- The sacroiliac joint is innervated by branches from nerve roots L4–S1. Pain is referred to the structures innervated by that particular nerve. Pain from sacroiliac injury may radiate into the leg. It will vaguely follow the dermatomal pattern of the nerve supplying that particular part of the sacroiliac joint. For example pain from the area innervated by L5 may be felt in the great toe and ankle while that innervated by S1 may go to the calf. The hallmark is that the pain is deep, dull and rather hard to delineate in contrast to radicular pain which is superficial burning and clearly delineated, following a dermatomal pattern.
- Similarly, the zygapophyseal (facet) joint is innervated by the medial branches of the nerves above and below the particular joint. Pain from the zygapophyseal joint will be referred to the leg as similar dull vague deep pain at the corresponding level. It will be evident that the pain from L4 and 5 zygapophyseal joints will be referred to similar areas as that from the sacroiliac joints.

It is felt as a somatic referred pain (pseudosciatica) with the characteristics listed in Table 1. Here it is contrasted with sciatica.

Pain from sacroiliac joints can be helped and often settled fully by cor-

Table 1. Pseudosciatica characteristics contrasted with sciatica

Pseudosciatica	Sciatica
Vague	Specific defined margin
Deep and dull	Superficial and sharp
Does *not* follow dermatomal pattern	Follows dermatomal pattern

rection of pelvic biomechanics – even when the pain has been present for a long time.

Pain from zygapophyseal joints and sacroiliac joints frequently can be helped by injection of steroid and local anaesthetic into the joint under direct visualisation, using image intensifier guidance[3]. The duration of effect is variable but can be prolonged by judicious adjustment of any co-existing biomechanical upset.[4]

Lumbar nerve root pain or sciatica, can be eased for a variable length of time using epidural steroid with local anaesthetic. Reports in the literature are generally only mildly positive.[5] Trans-foraminal injection (TFI) allows more accurate placement of the therapeutic agents around the affected nerve root. Thus, in disc protrusion the steroid can be injected closer to the interface between the disc and the dura – the site of algogenic substances responsible for generation of pain. This procedure is relatively new and the literature to date is much more promising. Musculoskeletal physicians in Auckland and Christchurch have been trained using the ISIS (International Society for Injection of the Spine) protocol and can apply for funding for this procedure from ACC and insurance companies in appropriate cases.

History

This is the single most important factor in management. There are many possible sources of pain

- the disc itself – is innervated in the outer third by sinu-vertebral nerves
- spinal ligaments
- para-vertebral muscles
- zygapophyseal [facet] joints
- injured nerve roots – only cause pain in the presence of algogenic chemicals such as substance P. Compressing nerve roots in the absence of such chemicals does not cause pain.

The history will often give the best clue to what is causing the pain.

How did the injury occur?

- lift and twist
- fall onto bottom
- fall heavily onto one leg or knee
- foot slipped off the edge of a step onto the next step.

[Fall onto one side (bottom 3 points above)raises likelihood of SI Jont problem – directly onto bottom more likely disc problem]

What was the onset of pain ?

- immediate
- felt a little sore and settled but woke in severe pain the next day
- gradual and has got progressively worse.

What is the nature of the pain?

- sharp and electric; shoots down the same path wrapping in around the leg (radicular)
- deep dull and vague moving to different sites around the leg and buttock (SIJ).

Where do you feel the pain?

- over the lateral hip buttock and groin (SIJ)
- down the leg in typical dermatomal distribution wrapping inwards (radicular).

Available evidence (level III) shows the reliability and validity of individual features in histories have low diagnostic significance.[6 7]

Examination

The best order of approaching a musculoskeletal problem is to: look, move and feel.

1. ***Look*** for symmetry, straightness of stance and signs of muscle spasm.
2. ***Move*** into flexion watching the adjacent bones, joints and soft tissues as this occurs
3. ***Feel*** for muscle tightness such as paravertebral spasm, (often felt as a prominent firm or hard ball of muscle), and lack of movement between spinal segments.

Again clinical signs detected during clinical examination must be interpreted cautiously as many tests lack reliability and validity.[8 9 10 11] (all level III)

Data in detail

Natural history

There is a wide variation in data on the natural history of back pain. Both the duration of symptoms at the time of inclusion, and the source of patients included in the studies, varies widely.

One commonly quoted study done in general practice12 followed subjects for 12 months. While 90% had stopped seeking medical advice and 27% stated they had recovered completely at three months, only 25% stated that they had recovered completely at 12 months (i.e. 2% worse than at three months!).

Another study of 524 patients from general practice in Denmark[13] also followed for 12 months showed that 46% were *not* completely recovered (i.e. 54% had recovered fully). Of those on sick leave for their back pain 50% had returned to work by eight weeks and 98% at 12 months, although 15% had taken further time off during the 12 months.

In contrast a further study based in general practice, looking at patients with back pain of under 72 hours duration at presentation, showed 90% complete recovery at two weeks.[14]

A very good study of the natural history of radicular pain[15] showed that VAS dropped from 54 to 15 as a group over the first four weeks. During this time 50% of the studied group of 214 lost their leg pain. However 70% still had back pain at 12 months.

A recent study based in primary care and done by colleagues in Australia, studied 'usual care' in patients with a mean duration of pain of 2.1 weeks. 49% had recovered completely at 3 months, 64% at six months and 56% at 12 months.[16]

The other point to remember in natural history is that common causes of low back pain include spondylosis, osteoarthritis and spinal stenosis but that the majority of people with these conditions are asymptomatic.[17]

Investigation

X-ray

Consider first the question you or the patient want answered. Explain the likelihood of finding an unexpected abnormality (which is 5%[18 19]) the cost (around $135), the x-ray exposure of a lumbar series (half the normal total annual environmental exposure) and ask if they still want to proceed.

X-ray shows abnormality of bone only and shows very little soft tissue which is the cause of >90% of low back pain.

X-ray shows abnormality in 50% of 50 yr olds. Thus after 50 it is *abnormal* to have a '*normal*' x-ray. The inverse is also true. It is *normal* to have an '*abnormal*' x-ray. Thus if your patient who has an x-ray without any sign of wear and is over 50 asks, *'Do I have a normal x-ray?'*, do you answer yes or no? I leave you to ponder. Personally I think you are generally better off without the confusion that the x-ray creates.

A study of patients who had low back pain present for at least six weeks (perhaps an appropriate time to consider x-ray) showed that 80% said they would choose to have an x-ray and that those in the x-ray group reported being more satisfied with their medical care.[20] I refer you back to the first paragraph of this section.

MRI

This is the most useful investigation for looking at soft tissues. It shows discs, nerves and facet joints and allows visualisation of nerve root compression and compromise as well as internal disc disruption. This was the most common cause of low back pain in one study conducted in a tertiary care unit.[21] However, studies of asymptomatic people show a high incidence of abnormality (see Table 2).[22]

It must be remembered that people are more likely to have an abnormal MRI with increasing age and that this is very commonly asymptomatic. Thus MRI is useful only for those patients in which surgery is an option that is being considered actively.

ACC is unlikely to fund an application unless surgery or spinal injection is being considered.

Table 2. Prevalence of abnormalities on MRI Scans of 67 asymptomatic people

Age	No.	Herniated Nucleus Pulposus	Disc Bulge	Spinal Stenosis	Disc Degeneration	All abnormal findings
All ages	67	24%	45%	4%	–*	28%
20-39	35	20%	–**	–	34%	22%
40-59	18	22%	–**	–	–	22%
60-80	14	36%	79%	21%	92%	57%

** Represents data not available from the paper.*
*** Disc bulge was present in 54% (29) of those aged between 20–59.*

CT

These are of limited value as the most frequently seen abnormalities are also common in asymptomatic people. This may be partly responsible for the variation in interpretation of abnormalities seen.[23]

Management

Cauda equina lesion (numbness around the pudendal region and bowel or bladder symptoms) is a medical emergency and requires immediate hospitalisation. Failure to decompress may lead to irreversible ischaemic changes, permanent damage and serious medico-legal consequences.

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Other than this condition, there is no rush. Most back pain gets better. Even lumbar radicular pain generally improves rapidly with no intervention. Long-term results of surgery for back-related leg pain are little if any better than conservative management. However, those with leg pain at six weeks may improve more rapidly with surgery.

The most important thing to manage in low back pain is the patient's anxiety. Informed reassurance, which consists of reassuring the patient while giving sufficient information to back up your claims, is the single most successful therapeutic option.[24] Be aware that the patient comes to you with an agenda or with a preconception of what their outcome may be. They will have talked to a number of people who have back pain and have significant concerns and anxieties. Psychosocial and occupational factors (yellow flags) affect progression from acute to chronic back pain.[25] Negative attitudes and outlook, passive coping strategies, and preoccupation with own health,[26] and distress,[27] all predict chronicity.

Interventions

It is important to be aware that lack of evidence, or insufficient evidence, does not mean that a particular intervention does not work. There are few studies of high methodological quality, and many interventions depend on the manual, the clinical, or the counselling skills of the therapist.

Invasive procedures

Injection therapy

Three literature reviews[36 27 26] show no clear evidence of benefit from injection therapy but a recent study by colleagues in Australia which received high accolade from van Tulder for its quality showed that

injection was beneficial for low back pain – the substance injected (within the range tested) did not seem to alter the outcome![37]

1. Diagnostic Blocks

Local anaesthetic agents may be introduced into various joints and tissues to endeavour to block the source of the pain. Total removal of the pain for the duration of action of the anaesthetic agent (two to three hours for lignocaine and four hours for Marcaine) is considered a positive response for identifying the source of the pain.

2. Therapeutic Injections

These can either be done blind as in infiltrating local anaesthetic together with steroid in the proximity of a structure thought to be the source of pain. Studies do not support the use of such procedures commonly termed 'focal local'.

Spinal epidural injection of steroid and local anaesthetic is another blind injection with a limited degree of usefulness.

Injection into joint spaces using image intensifier and contrast injection, or in proximity to nerve roots as in transforaminal epidural injection (where the agent is injected into the anterior superior corner of the neural foramen) does have significant supportive literature.[38 39 40]

Invasive procedures

3. Intradiscal Electrothermal Anuloplasty (IDET)

Intradiscal electrothermal anuloplasty is another new procedure that has been available only fairly recently. It was first performed in 1997 and offers an alternative to spinal fusion. The literature to date is limited but a recently published randomised controlled trial is positive.[41] It requires identification of the painful disc generally by provocative discography and then introducing a heating catheter to denature the protein of the annulus fibrosis which contains the nerve fibres responsible for the pain. This procedure does not preclude progressing to spinal fusion if it becomes necessary at a later date. It is expensive, however.

4. Surgery

Cutting into the region of the disc involves excision of spinal laminae and associated zygapophyseal (facet) joint. Fusion requires immobilisation of the segment and thus a requirement of the remaining segments to take over the role of the incapacitated segment. This results in extra wear of the remaining segments.

Surgery is indicated for neurological signs (not symptoms which may be considered a relative indication).

The long term outcome at ten years for patients with mild to moderate radicular pain fails to show clear advantage for surgery. However surgery provides faster relief of pain and in severe pain those treated surgically fare better.[42 43]

The long term outcome at ten years for patients with mild to moderate radicular pain fails to show clear advantage for surgery

Box 1. Data inbrief

Beneficial

Advise to Stay Active. Level I and II evidence shows advice to stay active provides a small beneficial effect on pain, rate of recovery and function, compared to bed rest and compared to a specific exercise regime.[28]

Advice to stay active also reduces sick leave compared to bed rest.[29 30]

There is no evidence that continuing normal activity within the limits of pain is harmful.

Muscle Relaxants. A review of the literature by van Tulder[31] concluded that muscle relaxants are more effective than placebo and equally effective with NSAIDs in treatment of acute low back pain.

NSAIDs. The same review by van Tulder, as well as reviews by Bigos[32] and Koes found evidence of benefit for NSAIDs compared with placebo or with no treatment, but no significant difference compared with analgesics.

Spinal Manipulation. A number of reviews[26 33 34 35] have concluded that spinal manipulation offers benefit in acute uncomplicated low back pain.

Insufficient evidence

Acupuncture. Limitation of usefulness of literature reviews due to flaws in study design and quality.

Analgesics. – Simple. No benefit
– Compound. Marginally more effective for pain relief than simple.

Back Exercises. Results were variable and overall the conclusion of literature reviews is inconclusive.

Back school

Cognitive behaviour therapy

Lumbar supports

Massage

Multi-disciplinary treatment in the work-place

Topical medicinal agents

Traction

Trans cutaneous electrical nerve stimulation

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