Srinagarind Med J 1996; 11(4) 269-274

LOW BACK PAIN - ORGANIC, PSYCHIATRIC OR MALINGERING?

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Abstract

Low back pain is a difficult diagnosis in conventional western medicine where a firm organic diagnosis is required before a treatment regime can be designed. This paper looks at the reliability of some of the tests used to make the diagnosis. The consequences of failing to spot the rare but potentially serious diagnosis is matched by the huge amount of resources which can be wasted in over-investigating many of the common conditions which do not require aggressive treatment.

Low back pain is an enormous problem in all societies, leading to a great deal of misery and considerable loss of working days. However, it is not a single diagnosis, and dissecting out the threads of the condition can prove time consuming but also very challenging. The condition is complicated by the fact that a musculo-skeletal, a psychiatric and even a malingering element may all be mixed together in one patient, creating a complex blend of cause and effect. There is no doubt that most people have episodes of backache at some stage in their lives. There is also no doubt that, if this pain is severe and persists for any length of time, the patient's personality is likely to be altered, and therefore may appear to be a psychological side to the patient's complaints, as well as simply an organic one. Finally, if the patient is not coping with the demands of their life, they might start to use the backache as a lever to bring about changes in their social environment, which may bear no relation to the severity of the backache. Western medicine tends to work on the model of a working diagnosis, the disease, which has a set of standardised treatments. Backache is particularly difficult to fit into this model. Even on the organic side, there are a multitude of different models for the cause of backache. Each group dealing with backache, physiotherapists, osteopaths, chiropracters, acupuncturists, etc., jealously defend their own particular model. The explanations for low back pain on which chiropractors and osteopaths base their treatment may appear complete nonsense when looked at dispassionately by an orthopaedic surgeon. That is until orthopaedic surgeons review the models on which they base their own practice; then things are not quite so clear. The only certainty is that patients of low back pain, and that they often get better, whether they receive 'treatment' or not. Beyond that is difficult to go. There is also no doubt that a patient diagnosed as having low back pain (lumbago) attracts more sympathy and support from the community than someone carrying a label of 'psychiatrically disturbed' or worse still 'malingering'. Samuel Butler in Erewhon pointed out the anomaly of this in the 1860s. His satire proposed a society where thieves were given hospital treatment and madmen were put in prison. At the end of the day, the society did not look much different from what they had then or even what we have now.

Rare causes of back pain

A further anomaly in western medicine is the finding that the rarer the diagnosis, the more concrete that diagnosis appears to be. There are some extremely rare diagnoses associated with back pain. Some of these are listed in Table 1.

Table 1 Rare causes of backache

Seminoma, ovarian tumour
Kidney tumour
Metastases
Carcinoma lung, mesothelioma
Space Occupying Lesion of spinal canal
Disc infection
Pancreatitis
Aortic aneurism
Osteoporosis with collapse
Retroperitoneal fibrosis

Most of them are diagnoses which can be made quite reliably if tested for. Unfortunately, or fortunately as the case may be, they are extremely rare and make up less than 1% of the cases of backache seen in a normal clinic. Clues to these unusual causes of backache are given in Table 2 and are rarely those signs that physician seeks when looking for malignant disease. Some of the more common putative causes of low back pain are

given in Table 2. There is no doubt that these conditions exist, but there is also no doubt that some patients found to have the conditions have no back pain and other patients without these

Table 2 The Commoner Causes of Backache

- Torn annulus
- Proalpsed inter-vertebral disc
- Osteoarthritis of spine
- Spinal stenosis
- Spondylolisthesis

conditions do have back pain. So, although it s very attractive for both the physician and the patient to have a labbel attached to their diseases, it is probably true to say that, in the vast majority of cases of bbackache, it is not appropriate to make any kind of firm diagnosis.

SpINs & SnOUTs

One of the new approaches to uncertainty in diagnosis is the concept of spINS and snOUTS(1). This relates to the specificity and sensitivity of a test. If a test is highly specific, the test is only positive if the patient really has the condition. Specificity says nothing about the number of patients who have the condition but do not test positive. It is clear therefore that, if a test, which is known to be specific, is negative in a given patient, it has not helped very much. If, however, it is positive, it is almost certain the patient has the condition. This leads to the acronym of 'specificity in' or spIN. In contrast, a sensitive test is always positive if the patients has the condition, but may also be falsely positive when the patient does not have the condition. Therefore a patient with a positive test which is sensitive, tells you little, but, if the test is negative, it is almost certain the patient has not got the condition, hence the acronym for 'sensitivity out' or snOUT.

Epidemiology

In this paper I am going to try to look at what little we know about the test used in diagnosis and the relevant frequency of certain diagnoses. In the general population pepulation 70% of adults have back pain. Fourteen percent of those have had an episode lasting longer than two weeks, 1.5% have had sciatica(2). However, prolapsed intervertebral disc, the favourite diagnosis of the orthopaedic surgeon, does not correlate well with these patients. Twenty to thirty percent of patients with no back symptoms at all have a prolapsed disc on imaging(3). Conversely, only 2% of patients with backache ever come to surgery for a disc(2). In general practice, the diagnosis in the majority of patients who present with back ache is not known(4). The rarer causes are compression fracture (4%), spondylolisthesis (3%), neoplasm (0.7%), ankylosing spondylitis (0.3%) and spinal infection (0.01%) (5).

Malignancy

One of the most important roles in a consultation for low back pain is to exclude malignant disease. Although it makes up only 1% of low back pain, early diagnosis may have a profound effect on prognosis. A history of previous cancer is highly specific at 98%, but sensitivity is only 31%. In other words, a history of previous cancer makes it very likely indeed that backache is related to that cancer, but an absence of history of cancer does not in any way exclude the diagnosis(6). Continuous pain is the other way round. The sensitivity is 90% but its specificity is poor. In other words, the absence of continuous back pain makes it very unlikely to be cancer, but the presence of continuous pain does not in any way prove the diagnosis of cancer. The signs of backache caused by cancer are so sensitive that, in 2,000 consecutive patients under the age of 50, no cancers were found in patients who did not have a) a history of cancer, and b)

unexplained weight loss, and c) failure of conservative treatment. It is therefore clear that these are three cardinal questions that should be asked of all patients(6).

Sciatica

Sciatica pain, radiating down the leg beyond the knee, is often regarded as an important symptom, and indeed in patients with low back pain, this proves to be the case. Sciatica is 95% sensitive for disc prolapse(7). In other words, if there is no sciatica it is very unlikely that there is a disc prolapse of clinical significance. The straight leg raise test is also highly sensitive, but not specific(8). The cross-over straight leg raise, where raising one leg produces sciatica-like pain down the other leg, is very specific, but not particularly sensitive(8). In other words, it does not always occur when there is a disc prolapse but, if it is present, it is a very clear evidence that there is a disc prolapse. The femoral stretch test for higher nerve root entrapment has unknown sensitivity or specificity. When looking for objective evidence of nerve root compression, it is found that loss of foot sensation is much more sensitive than loss of sensation elsewhere in the leg(5). It is therefore probably only necessary to test foot sensation. The ankle reflex is specific for S1 nerve root, and the toe dorsiflexors, particularly extensor hallucis longus (the tip of the big toe), is specific for L5.(7) It is therefore probably appropriate only to test foot sensation, ankle reflex, and toe dorsi-flexors when looking for evidence of sensory or motor loss. The inter-observer agreement when eliciting ankle reflexes is surprisingly low with a kappa value of only 0.39-0.35(8). It appears that the achilles tendon tap is no better than tapping the ball of the foot. It is worth noting that the ankle reflex is only present in 91% of patients under 65 and only 71% of patients over 65. It is unfortunate that testing plantar flexion power has a low sensitivity. It also has very poor reproducibility when tested by asking the patient to toe-walk(8). This should probably therefore be abandoned as a test. For sensory examination, pin-pricks seem to give more reproducible results than anything else. As distal loss is most prominent it is probably best to confine the sensory examination to the foot comparing sides and comparing the medial lateral and dorsal sides of the foot.

Spinal stenosis

Spinal stensosis is a relatively new diagnosis which is going through that phase where it is as common as you look for it. The mean age of onset seems to be around 55 years with a duration of years symptoms around four years. It differs from vascular claudication in that it can come on just from standing rather than walking. There is often a positive cough impulse. The sensitivity of this history is 60% and the specificity is believed to be good. On examination, the sensitivity of reported hypersensitivity of the leg is said to be as high as 85%, while an abnormal neurological examination is found in 60%. An abnormal straight leg raise is found in 50%. This is when compared with a definite diagnosis made by magnetic resonance imaging (MRI), computeriged axial tomography (CAT) scan or myelography(9,10).

Malingering

In compensation cases, and even in general management of low back pain, it is often tempting to try and work out to what degree the patient is malingering, or merely showing inappropriate response to the pain that they may or may not have. Waddell has described a set of inappropriate signs which are suggestive that the patient is putting things on(11). The first is inappropriate superficial widespread tenderness. The second is pain on simulated axial loading (pressing on the top of the head).

The mock rotation test involves twisting the patient's pelvis while they are standing. Their shoulders will actually move with the pelvis and therefore create no load on the spine, but the patient may imagine that this is twisting their spine and may then report pain. The Ian Airde test is a method for testing whether the patient is putting on the pain experienced at a straight leg raise. If the patient has a positive straight leg raise test, then it is possible to reproduce the straight leg raise test, without the patient being aware of what is going on. This is done by sitting the patient up with their legs hanging over the side of the bed (the knees are bent at this time). While examining the patella, the knee is gently straightened. If the patient does not report sciatic irritation symptoms, then this test suggests that the patient is malingering. There are, however, some surgeons who believe that this test does not stretch the sciatic nerve in the same way as the straight leg raise test, and that therefore it is not as reliable as people would like to think. The other signs reported are loss of power and sensation incompatible with a root lesion and generalised over-reaction during examination. A further set of two signs, that we have observed in our own practice, are the dressing sign. The patient is asked to go from lying on the examination couch to getting up and getting dressed as quickly as possible, so that the next phase of examination can be undertaken. During this time, the doctor either ignores the patient, busying himself with writing notes, or actually leaves the room. the moves that the patient can go through, apparently quite quickly and without pain, may be very different from the limitation in movement recorded during the normal examination. a second test involves the testing of muscle power, particularly of the big toe. There appears to be three clear responses from a patient. Either the patient resists pressure from the examiner and power is recorded as normal, or the patient is unable to resist the force applied by examiner. In this case, the muscle is recorded as weak. In the third case, the power appears to fluctuate and the joint moves in response to the pressure, but in a jerky way with short periods when the muscle power apears to be normal, interspersed with periods when the muscle is apparently unable to develop any power at all. This cog-wheel response appears to be associated with patients who are trying to demonstrate muscle weakness, rather than having true muscle weakness, and may be a sign of malingering.

Conclusion

In conclusion, low back pain is a very challenging problem, being a common pathway of presentation for patients who have a) underlying malignant disease, b) a prolapse disc, c) depression and/or anxiety, and d) an inability to cope with the present social circumstances. A careful work up of a patient with low back pain will enable most of the rarer causes to be excluded with some certainty, providing that all the diagnoses are considered. For the majority of cases, however, no definitive cause is found and the doctor is left with a complex blend of organic back pain of unknown origin, psychological problems and inability to cope socially, all of which may be inter-related. The key to the management appears to be to find the route which is likely to do the most good with the least amount of harm. The main role for orthopaedic surgeons is to exclude the rare and serious causes. After that anyone who feells they have something to offer is welcome to try, providing that they do no harm.

References

1. Sackett DL, Haynes RBB, Guyatt GH, Tugwell P. Clinical Epidemiology-A basic science for clinical medicine. (2nd ed.) London:Little, Brown and Company, 1991:441.
2. Deyo RA, Tsui-Wu JY. Descriptive epidemiology of low-back pain and its related medical care in the United States. Spine 1987;12: 264-8.
3. Boden SD, Davis DO, Dina TS, Patronas NJ, Wiesel SW. Abnormal magnetic resonance scans of the lumbar spine in asymptomatic subjects. Journal Bone and Joint Surgery 1990;72-A:403-408.
4. Nachemson A. The lumbar spine: an orthopaedic challenge. Spine 1976;1:59-71.
5. Deyo RA, Rainville J, kent DL. What can the history an physical examination tell us about low back pain? JAMA 1992;268(6):760-5.
6. Deyo RA, Diehl AK. Cancer as a cause of back pain: frequency, clinical presentation, and diagnostic strategies. J Gen Int Med 1988;3:230-8.
7. Spangfort EV. Lumbar disc herniation: a computer aided analysis of 2504 patients. Acta Orthopaedica Scandinavica 1972;(suppl 142):1-92.
8. McCombe PF, Fairbank JCT, Cockersole BBc, Pynsent PB. Reproducibility of physical signs in low-back pain. Spine 1989;14(9):908-918.
9. Turner JA, Ersek M, Herron L, Deyo R. Surgery for lumbar spinal stenosis: attempted meta-analysis of the literature. Spine 1992;17:1-8.
10. Hawkes CH, Roberts GM. Neurogenic and vascular claudication. J Neurol Science 1978;38:337-45.
11. Waddell G, McCullogh JA, Kummel E, Venner RM. Nonorganic physical signs in low back pain. Spine 1980;5:117-25.