

Epidemiology, Economics and Psycho-social of Low Back Pain

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SUMMARY - *We very often stress technical problem and diagnostic imaging approaching spine disease forgetting sometimes some basic concept related to epidemiology, definition of the disease, ergonomics, economy and psycho-social features of low back pain. This brief paper wants to underline this points helping current and future management of this disease.*

Epidemiology of Low Back Pain

The precise evaluation of low back pain epidemiology starts, first of all, with the correct definition of Low Back Pain (LBP). LBP is defined as pain located between the inferior costal margin and the buttock crease, with or without leg pain. Without the consideration of this definition and of these frontiers for LBP every measure of its epidemiology is biased.

Nonetheless, with the best data available, we can be sure to declare that LBP is extremely common and one of the most prevalent symptoms. It is estimated that between 70% and 85% of all people have at least one episode of low back pain at some moment in their lifetime. Besides having a very frequent prevalence it also affects patient in all age groups. LBP is even a relatively common complaint at adolescence. In addition, in a significant part of patients the complaints are recurrent or chronic, even in 14-year-old adolescents. Because of this, it is very easy to understand that LBP is in the origin of very serious and troublesome after-effect, representing a major cause of healthcare seeking, with the consequent disability and sick leave, with remarkable social and economic consequences. However, it should be emphasized that LBP is not a disease per se but only a symptom.

LBP can be classified as acute, sub-acute and chronic. By definition, LBP is classified as chronic after 2 months of duration. One question we should ask is if the chronic cases will be as such from beginning of the symptoms or if they represent a consequence of failure in early treatment.

It is important to stress is that in almost 85% of cases the precise etiology for the LBP remains unexplained.

Another problem with the evaluation of LBP is that most of the data available are from self-reported-questionnaires. They tell us about how people experience LBP, but since different questions give different evaluations, these remain unsatisfactorily subjective, and for this reason, unsuitable for the correct evaluation of patient with LBP. There are, however, several questionnaires and evaluation scales available (Table 1) to be aware of, since they grant a much more objective, uniform and reproducible assessment of patients with LBP.

Nevertheless, the problems with the appreciation of the epidemiology of LBP don't end here. In fact, the reasons that prompt these patients for care-seeking are complex. They do not always seek a medical fix, and in these cases reassurance may be enough. In this way, in patients with LBP a health problem does not always equal a medical problem, i.e., they do not always need a medical intervention.

Pathology in Low Back Pain

Degenerative spine diseases are certainly very common since age-related alterations are almost inevitable in spinal column. These phenomena start as early as in the adolescence and continue onwards during all life of the individual. Studies suggest that physical activity exposure has limited influence in this process and there is no evidence that it leads to an acceleration of the degenerative changes. However, there seems to be a great genetic contribution, and about 70% of disc degeneration is associated with some genetic factors. In fact, in more than half of the cases, heritability seems to have a role in the physiopathology of LBP. It

Table 1

Outcome Measures	
General Health Assessment	Spine Specific Outcome Measures
Short Form Questionnaires (SF 6,12, 36) EuroQol 5D ECOG	<u>Lumbar Specific</u> - Oswestry Disability Index Roland Morris Disability Questionnaire <u>Cervical Specific</u> - Neck Disability Index - Cervical Spine Outcome Questionnaire <u>Myelopathy</u> - JOA Myelopathy Scale Scoliosis - SRS Questionnaire
Pain Rating Scales	
Visual Analog Scale Numeric Rating Scale	
McCormick JD, Werner BC, Shimer AI. Patient-reported Outcome Measures in Spine Surgery. J Am Acad Orthop Surg February 2013; 21: 99-107	
Psychosocial Measures	
Modified Somatic Perception Score Modified Zung Depression Index Hospital Anxiety and Distress Score Minnesota Multiphasic Personality Index	

should be also noted that the simple presence of spinal degenerative alterations does not always relate to LBP or disability. However, if these degenerative changes result in spinal stenosis, the consequences are more problematic.

Economics

Although the economics of health related problems are very complex, a simple question is if the benefits outweigh the costs. Nonetheless it is a question to which it is difficult to answer precisely and some generalizations and implications must be made. What is easy to understand is that an early investment in correct evidence based care can generate long term cost savings.

The WHO biopsychosocial model embodies and highlights all the fundamental features in the definition of health: biological (neurophysiology, physiological dysfunction - tissue damage?), but also encompasses psychological (illness behavior, beliefs, coping strategies, emotions, distress) and social aspects (culture, social interactions, the sick role). From the social point of view, unemployment is very detrimental for both the physical and the mental health. Work is generally good for health, both for people of working age and for most people with common health problems, including LBP. In this way it is easy to understand that

people with LBP should go back to work as soon as possible: generally work is therapeutic, helping to promote recovery, strive against the harmful physical and mental effects of long-term absence and the risk of chronic disability, besides reducing poverty and social exclusion. The UK occupational health guidelines state that individual psychosocial findings are a risk factor for incidence (onset) of LBP, but overall the size of the effect is small. Unsatisfactory psychosocial aspects of work are risk factors for reported LBP, health care use, and work loss, but the effect size is modest. Individual and psychosocial aspects of work play an important role in persisting symptoms and disability, and also influence the response to treatment.

Ergonomy

In work, a fundamental concept to be considered is the ergonomics. Once operated, the ergonomics play an important role in the individual's safety and health.

However, these are two different concepts: preventing accidents is very different from preventing ill-health. In this aspect, chiropractor and physical therapy has a very important role. A simple aspect as the lifting technique of objects has substantially changed in UK, in response to biomechanics evidence-base.

Think first
Keep load close to waist
Adopt a stable position
Ensure good handhold
Moderate flexion of back, hips and knees don't flex any more during lift
Avoid trunk twist or side-bend
Keep head up
Move smoothly
Only lift what you can manage
Put down, then adjust position
Do able?

Training in the work is fundamental, changing the way people do things. Training is optimized if it is behaviorally oriented and it involves the workers. It can improve perceptions of comfort and safety. However, training alone has little impact on back injuries or absence. A common complaint of the workers is that the techniques don't fit the needs on their job.

Clinical Evaluation

"Listen to your patient; he is telling you the diagnosis" - Sir William Osler.

The clinical evaluation of patients with LBP is a fundamental part of the diagnostic process. In fact, 95% of diagnosis is made on the history, and so effective communication skills are essential. They can also help us to live up to the patients expectations. To achieve these goals, a structured consultation (Table 2) is fundamental.

Table 2 Structure of the Consultation - Patient's agenda/needs

1	Documentary formalities
2	Meeting and greeting
3	Basic orientation data (incl. employment)
4	Presenting complaint
5	Past medical history
6	Medication
7	Allergies
8	Family history
9	Social history
10	System review
11	"Anything Else?"

The evaluation should begin with the clear definition of the symptoms. However, this can be hampered because of the multiplicity and the non-specificity of symptoms presented by the patients. Somatization and litigation can further hamper the evaluation of these individuals. Co-morbidities, namely multiple sclerosis and motor neuron dis-

ease, should always be asked for, and especially Vitamin D deficiency or hypercalcemia must be evaluated in these patients. Pain is the crucial symptom and it should be evaluated in the best possible way: the duration of the symptoms, its location, the presence of eventual irradiation and lateralization and if it is constant or intermittent, possible relief or worsening factors, such as coughing, movement, positional, walking and the nocturnal behavior. Pain on coughing, straining or sneezing are strongly suggestive of a radicular origin. Drug history (namely the use of warfarin, aspirin or other anti-platelet agents), analgesia, smoking and alcohol habits and family history (including neurological diseases and spinal deformities) are also part of the clinical evaluation of these patients. Red Flags for LBP (Table 3) should always be kept in mind since they can suggest the presence of more serious pathology.

Table 3 Red Flags

- Age of onset < 20 or > 55 y
- Constant progressive non mechanical pain (no relief with bed rest)
- Violent trauma
- Thoracic pain
- Past medical history of malignant tumor
- Prolonged use of steroids
- Drug abuse, HIV, immunosuppression
- Signs of systemic disease
- Unexplained weight loss
- Widespread neurology (with cauda equina syndrome)
- Structural deformity
- Fever

Diagnostic Imaging - Clinical Neuroradiology

The request for imaging studies in patients with complaints of LBP is the norm. There are several modalities that referring physicians can ask for the diagnostic evaluation: x-rays (including dynamic studies), CT, MRI and NBM bone scan. In most of these cases there will be degenerative disease of the spine in some varying degree. But, as noted before, the simple presence of these alterations does not relate to or will justify the patient complaints of LBP. In fact, Jensen et al. in a MRI study of the lumbar spine in 98 asymptomatic subjects (mean age 42,3 years, range 20-80) noted that in only 36% of subjects studied all the lumbar intervertebral discs were normal. In fact, 52% had a bulge at least at one level, 27% had a disc protrusion and 1% even had a disc extrusion. There were also 19% of subjects with a Schmorl's node, 14% had disc annulus defect and in 8% of them facet joint arthropathy was identified. In another

study, Kleinstuck et al. reported an even lower percentage (11%) of asymptomatic individuals in which the discs were completely normal. So, even though MRI is very sensible in detecting degenerative disease of the spine, these alterations are very frequent even in asymptomatic patients. MRI also has very low specificity in the identification of the origin of the pain, since they recurrently affect multiple levels. Moreover, the simple presence of abnormal MRI findings does not even predict the development of LBP in the future, as noted in studies by Borstein et al. and Videman et al.. Therefore, the basilar point is to use those imaging studies in a complementary way to the clinical findings: clinical correlation is required and it is fundamental to determine the significance of the abnormal findings that probably will be observed on the lumbar neuroimaging studies.

On the neuroradiological evaluation of imaging studies it is important to look not only to the spine and contained structures, but also at the paravertebral soft tissues (muscles, fat and ligaments),

always keeping in mind that the patient complaints may have different origins not concerning degenerative disc or vertebral disease. In this evaluation, and even in cases of degenerative disease of the spine, contrast agent (gadolinium) may be useful.

Therapeutic program

Awad et al. compared the surgical and the nonsurgical treatments of lumbar disc herniations based on the analysis of the available literature. He concluded that both types of treatment had similar results and that no method of non-operative or operative treatment seems to be superior to another. He argued that the ideal is to provide an evidence based approach to the treatment of lumbar disc herniations and to create a specific treatment (medical and physical therapy, psychological support, percutaneous treatment or surgical therapy) suited for the individual patient's spinal pathology, socioeconomic status and behavioral environment.

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