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REVIEW PAPER

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Non-specific low back pain – what does it exactly mean? A proposed redefinition and classification of the problem

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ABSTRACT

Introduction. Analysis of the medical literature shows that non-specific low back pain is a multifaceted affliction. Determining the unequivocal definition and classification of the ailment could be somewhat difficult. The following review presents a multiplicity of common low back pain nuances. The paper also shows necessity of unification of the definition and clarification, for placing non-specific low back pain among other musculoskeletal disorders.

Aim. The author will attempt to provide the answers to basic questions about non-specific low back pain. In its form, the paper will have similarities to the prospect study with narrative review features. Although the reader should remember that the article is neither a result of expert team efforts nor non-specific low back pain leading authority opinion. Therefore the suggestions should be interpreted with necessary distance and scientific scepticism.

Material and methods. Proper publications were searched in PubMed and EBSCO scientific articles databases, using terms: 'non-specific low back pain' or 'non-specific low back pain', 'definition', 'diagnostic triage', and 'classification' in different combinations.

Results. As a result of the review, subtle correction of the current non-specific low back pain definition has been proposed.

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Keywords. low back pain, classification, triage, syndrome

Introduction

It is estimated that lifetime prevalence of low back pain (LBP) will occur in more than 80% of the general population.[1,2] Despite the widespread presence of the problem, making a precise diagnosis and indicating adequate treatment is not possible in the vast majority of LBP cases. Spinal complaints with unclear genesis are described as 'non-specific' (n-s) but it should be stated that they form a heterogenic group of disorders, containing patients with different symptoms and responding to therapy in different ways.[3] Effort was taken in this article to clarify the exact meaning of 'non-specific low back

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pain'. Differentiation of n-sLBP complaints was also described. Moreover, classification was proposed, allowing the elimination of existing inaccuracies in nomenclature and diagnosis.

Aim

The author's intention of this review was to raise *ab ovo* simple questions about common low back pain. Despite existing broad explanations of n-sLBP issue, the most common definition seems to be incomplete. The ancillary purpose of the study was an attempt to specify classification of low back problems based on previously described and accepted propositions.

Description of the subject literature

Due to the chosen form of narrative review, the article does not describe the study's methodology. It neither lacks the fundamentals of scientific research. Appropriate papers were searched in PubMed and EBSCO databases, using appellations: 'nonspecific low back pain' or 'non-specific low back pain', 'definition', 'diagnostic triage', and 'classification' in different combinations. Approving appropriate articles to next phases of the research analysis was achieved by the author's subjective evaluation, taking into account the title, abstract content, date of publication, and profile of the journal, and researcher names. Around sixty articles were analyzed, 75% of which were published after 2000.

Analysis of the literature

Studying historical descriptions of the concept of ordinary low back pain provides a significant body of research and evidence, profiling this particular ailment. A current prevailing tendency to correlate spinal complaints with its 'degeneration' changes probably may have emerged from imaging developments, leading one respected scientist of the early nineteenth century to conclude: 'Intervertebral disc lesions are the most common cause of back pain'.[4] In many countries, taking X-ray, computed tomography, and sometimes magnetic resonance of the spine is actually accepted diagnostic procedure used by specialists for establishing back pain causes. Depending on exacerbation of symptoms, period of disability, and result of medical imaging, the decision about type of treatment is taken (e.g. conservative treatment, surgery, pharmacotherapy, physiotherapy or other way to decrease pain).

Unfortunately, spinal imaging in cases of non-specific complaints, often doesn't explain the underlying mechanism of pain, as shown in research on asymptomatic groups.[5] In the third decade of life 37% of people without symptoms have 'degeneration' changes in their intervertebral discs, and the percentage increases systematically, acquired 80% among people in their fifties, and 96% in 80 year old subjects.[6] This could be regarded as a false positive result of imaging. A current observation confirms the low value of imaging examination for diagnosis, prognosis, and differentiation for non-specific problems of the spine.[5,7,8] Moreover, overuse of imaging is expensive and increases the risk of iatrogenic complications.[9-11] Likewise, an alarming phenomenon is the cascade effect, which within the context of healthcare could be defined as series of events initiated by unnecessary imaging, its unexpected result, and patient or specialist apprehension. The first incident triggers further inadvisable investigations or incorrect treatment with consequences such as increased morbidity and escalated adverse actions.[12] With reference to low back pain, the cascade effect in cases of unfounded magnetic resonance scanning is also associated with long-term economic consequences. Management for patients without imaging allows significantly decreased cost of healthcare in the following twelve months since pain began.[13]

Definition

The formulation 'low back pain' has capacious semantics and refers to indisposition with various aetiology and duration. However, it is not a disease or precise diagnosis. It is rather a symptom or group of symptoms around specific anatomical location.[14] In contrast to the exact disease, aetiology of n-sLBP is unclear but it doesn't mean the complaint has no cause. Signs could be similar in different patients and could react to treatment in an anticipated manner. Therefore, according to medical paradigm, back pain is a syndrome and should be considered as a syndrome, corresponding to some authors.[15,16]

If pain sensations are below the twelfth ribs and above the gluteal folds, low back pain should be considered. Feelings could also radiate along the lower limb.

Due to pain duration low back problems could be subdivided to:

- acute low back pain, lasting less than 6 weeks
- subacute, between 6 and 12 weeks
- chronic, lasting above 3 months.[17]

In cases of recurrent complaints following episodes are separated by at least a six month period without symptoms. Recurrent LBP doesn't include exacerbations of chronic LBP.[18]

Criterion of a pain duration is not an only in reference to spinal problems. Relevant determinants for back pain definition could be also:

- time frame (e. g. last 4 weeks)
- site of low back pain
- radiation to the limb
- inclusion criteria – e. g. exclusion pain related to severe infection or menstruation
- the frequency of symptoms (e. g. every day, sometimes)

– the severity of low back pain (using pain rating scales).[19]

Only some of all low back pain cases have an accurate explanation. They are named 'specific low back pain', which is distinguished from non-specific complaints through diagnostic triage (fr. 'triage' means 'to segregate', 'to sort') proposed by Gordon Waddell.[20] In accordance with triage, there are three groups of patients with low back pain, in which the first two are specific:

1. Patients with radicular syndrome (often due to disc herniation or stenosis of intervertebral foramens) – about 5% of those with low back pain
2. Patients with serious spinal pathology (so called 'red flags', for example fractures of vertebrae, spinal tumours or infections, or cauda equina syndrome) – around 1-2% of suffering from low back pain
3. Patients with n-sLBP – around 85-95% of all low back pain cases.[21]

In professional literature non-specific LBP is defined as pain of the lower back, which is not attributable to a recognisable and known specific pathology (i.e. infection, tumour, osteoporosis, Bechterew disease, fracture, structural deformity, inflammatory disorder, radicular syndrome or cauda equina syndrome).[22-25] This explanation is tautological and creates a vicious circle in defining.[26] It also fails to include other negative sensations beyond pain as tension, rigidity or stiffness for instance. Wherefore, as the following explanation may be more suitable:

Non-specific low back pain comprises every unpleasant sensations occurring between the twelfth ribs and the gluteal folds, with radiation to the limb or without, not attributable to any precise pathoanatomical diagnosis.

They are described also as a 'common' or 'simple' low back pain contrary to less common specific problems of the spine.[23]

It is difficult to overappreciate the homogeneous definition for low back pain in context of statistical analysis and epidemiological research. The accurate, unequivocal and universal elucidation is required to avoid widespread incongruence of epidemiological research on LBP. Collecting epidemiological information about LBP is worth using existing scientific literature suggestions for the standardisation of back pain denotation, which allows further comparison and juxtapositions of prevalence or incidence. Valuable commentary in this subject could be the report from Canadian and British researchers. They presented a heuristic proposal of low back pain definition in two versions: minimal and optimal to help in data collection and comparison.[27]

Towards current medical knowledge there is no certainty about precise sources of discomfort in case of non-specific low back problems.[21,22,28] Miscellaneous possibilities of symptom roots are considered. Complaints may originate from various structures which has sensory innervation for example:

– intervertebral disc (accurately external layers of annulus fibrosus)[29,30]
– spinal ligaments[31,32]
– zygapophyseal joints[33-35]
– back muscles[36]
– sacroiliac junctions[37]
– dura mater of spinal cord.[38,39]

Referred pain as a consequence of internal organ diseases or abnormalities of other tissues having neural supply from lumbar and sacral segments of the spine should also be taken into account.[22,40-42] Other interesting explanation for spinal disorders could include psychosocial conditions, and back pain as a result of modulation in function of the central nervous system.[43,44]

Differentiation

International guidelines for low back pain agree that diagnostic triage is a useful tool in clinical practice.[1,14,45,46] Exclusion of serious spinal pathologies as the first stage of patient segregation, and subsequent examination for the radicular syndrome, enable for appropriate categorization of individuals, complementing the particular disorder definition. However, diagnostic triage has also some disadvantages. So called 'red flags' are used for exclusion of patients with significant pathologies. They are signs and symptoms suggestive of serious spinal pathology.[47,48] Henschke and Maher suggested a combination of 25 alarm manifestations corresponding to dangerous maladies. The same authors note that more than 80% of primary care patients with acute low back pain show at least one symptom detailed in Table 1, although the real proportion of patients with serious changes in their spine was less than 1%.[49] Despite such an overestimation of dangerous spinal diseases, using a complete 'red flags' check list in clinical practice may minimise the probability of a significant pathology omission.[50]

The second group of low back pain patients may represent those with radicular symptoms which are also specific complaints, similar to serious spinal disorders. This group includes radiculopathy cases, radicular pain patients and individuals with real spinal stenosis, collectively named by the term of radicular syndrome. The problems usually arises from an intervertebral disc herniation, facet joint cyst, osteophytes, spondylolisthesis or spinal canal stenosis (acquired or as an effect of degeneration disease of the spine).[51,52] Radicular pain commonly coexists with radiculopathy symptoms.[53] Confusion could make the 'sciatica' diagnosis very popular among specialists, despite the small prevalence of this problem. Furthermore, 'sciatica' is a misleading description as it refers to the signs uncorrelated with sciatic

Table 1. So called 'red flags' corresponding to serious spinal pathologies[49]

Pathology	Red flags
Cancer	– Age at onset less than 20 or over 55 years – Unexplained weight loss (of more than 10 pounds [4.5 kg] in 6 months) – Previous history of cancer – Tried bed rest, but no relief – Insidious onset – Systemically unwell – Constant, progressive, non-mechanical pain – Sensory level (Altered sensation from trunk down)
Infection	– Systemically unwell – Constant, progressive, non-mechanical pain – Recent bacterial infection, e.g. urinary tract or skin infection – Intravenous drug abuse – Immune suppression from steroids, transplant or HIV – Sensory level (Altered sensation from trunk down)
Spinal fracture	– Age over 70 years – Significant trauma (major in young, minor in elderly) – Prolonged use of corticosteroids – Sensory level (Altered sensation from trunk down)
Inflammatory disorder	– Gradual onset before age 40 – Tried bed rest, but no relief – Insidious onset – Systemically unwell – Constant, progressive, non-mechanical pain – Morning back stiffness, 0.5 hours or more – Peripheral joint involvement – Persisting limitation of spinal movements in all directions – Iritis, skin rashes (psoriasis), colitis, urethral discharge – Family history of arthritis or osteoporosis – Pain improves with exercise
Cauda equina syndrome	– Acute onset of urinary retention or overflow incontinence – Loss of anal sphincter tone or faecal incontinence – Saddle anaesthesia about the anus, perineum or genitals) – Widespread (greater than 1 nerve root) or progressive motor weakness in the legs or gait disturbances
Other	– Sensory level (Altered sensation from trunk down)

nerve abnormalities. This may be the common presence of referred pain related to the spine but in most cases it is not a neurogenic radiation, only complaints known as the somatic referred pain.[54,55] The term of 'sciatica' may also well illustrate a patients' signs, which in ligamento-capsular irritation may generate pain sensations radiating even to the foot as far.[56] It should be noted that in some pathoanatomical conditions (e.g. tumour growth), exacerbation of radicular syndrome symptoms may occur.[57] There are a number of signs that may suggest the presence of the radicular syndrome.[58-61] They are listed in table 2.

After excluding specific spinal disorders, there still remains the largest group of non-specific low back pain. No test or examination is known to confirm or exclude non-specific complaints. Therefore, n-sLBP identification occurs by elimination of two previous and definitely fewer groups of spinal problems.

It should be mentioned that the described process is rarely an isolated proposition and other possibilities to confirm n-sLBP exist. Dr Hamilton Hall from Toronto University stated that 'red flags' exclusion doesn't have to be the first stage for categorizing back pain patients, because statistically serious pathologies are rare (about 1-2 cases in a hundred). Instead, patients may be qualified to one of four different pain pattern groups and treated in an adequate manner. In this approach, only when the therapy fails to improve symptoms, then serious pathologies are considered.[15,16]

Conclusion

In summary, n-sLBP concerns the majority of all the symptoms between the twelfth ribs and gluteal folds. According to low back pain characteristics, it seems appropriate to classify the disease as a syndrome, i.e. a set of symptoms with no clear source but occurring as a similar manifestation in different patients, and responding to the treatment in an anticipated and repeated manner.

Multi-structural probabilities for low back pain origins, determine a pronounced disproportion between specific and non-specific patients numbers. Accurate

Table 2. The most common symptoms of the radicular syndrome[58-61]

Symptom/Sign	Radicular pain	Radiculopathy	Stenosis
Leg pain worse than back pain	+		
Sharp, lancinating or deep ache	+		
Pain increasing with cough, sneeze or strain	+		
Dermatomal pain concentration (below knee for L4, L5, S1)	+		
Unilateral leg pain location	+		
Positive provocative tests for dural irritation: PKB (L2-L4), SLR and/or CSLR (L4-S2)	+		
Positive Kemp sign	+		
Numbness or paraesthesia (especially in distal dermatome)		+	
Myotomal weakness or loss of function (e.g. footdrop)		+	
Neurogenic claudication relieved by flexion			+
Older patient, bilateral leg pain or cramping with or without LBP			+
Bilateral leg pain exacerbated by extended posture (e.g. standing) and relieved by flexion (e.g. sitting)			+
Wide based gait			+
Antalgic postures (e.g. stooped standing and walking)			+

PKB – prone knee bend, SLR – straight leg raise, CSLR – crossed straight leg raise

categorisation of patients may significantly reduce the costs of health care related to diagnostic imaging, which is contraindicated in non-specific complaints, and could be even deleterious.

The manner in naming spinal problems by practitioners requires revision due to its consequence for patients, especially for those hypochondriacs and those inclined to catastrophize. It's an ailing group who have an opportunity to recovery faster if not informed of their imaging reports and didn't hear a diagnosis such as 'sciatica' or 'critical stenosis'.

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