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Low Back Pain in primary health care: Diagnostic triage and treatment

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ABSTRACT

Low back pain (LBP) is one of the most common causes of appointments in primary health care. It leads to a significant reduction in physical activity and the inability to work. Most people experience acute LBP at least once in their lives. In the GP's practice, performing a differential diagnosis and excluding possible red flags that may suggest a condition requiring urgent intervention is extremely important. Diagnostic triage relies on assigning a patient with LBP to one of three groups: Specific spinal pathology, radicular syndrome, and non-specific LBP. Treatment depends on the underlying cause of the pain; however, the great majority of patients belong to the non-specific LBP group.

Keywords: Low back pain; primary health care; red flag; diagnostic triage; non-specific low back pain

1. INTRODUCTION

Low back pain (LBP) is among the most common complaints reported at the GP's office. In addition, it is the reason for the limitation of physical activity and inability to work, which decreases the quality of life and generates economic losses (Patrick et al., 2014). The lower back covers the area from the level of the 12th rib to the iliac crest (Knezevic et al., 2021). Low back pain can be classified on the basis of acute, lasting <6 weeks; subacute, lasting 6-12 weeks, and chronic, lasting >12 weeks (Urits et al., 2019). Most people experience acute LBP at least once in their lifetime, and most often, the condition is self-limiting, although depending on the cause, the pain may change to chronic (Knezevic et al., 2021). The development of chronic LBP affects about 10-15% of patients with acute pain. (Balagué et al., 2012).

Objective

This study aims to summarize information about diagnostic triage, red flags, and treatment of low back pain in primary health care.

2. METHODOLOGY

To write this review paper, we searched databases such as PubMed and Google Scholar for the following terms: Non-specific low back pain, low back pain in primary health care, and low back pain treatment in primary care. We based our work on systematic reviews, a comprehensive review, and a systematic review of prospective cohort studies pertaining mainly to primary health care practice. In this review paper, we also utilized the National Clinical Guidelines. We have excluded studies on hospitalized patients and surgical treatment. Twenty-six articles, including papers published between 2012 and 2023, were cited in this publication.

3. RESULTS AND DISCUSSION

Epidemiology

LBP most commonly occurs in females between the ages of 50 and 55. The lifetime prevalence of back pain is up to 84%. 10-15% of patients will develop chronic LBP (Custers et al., 2024). With the aging of the population, LBP is becoming a global problem. LBP more often affects patients from highly developed countries and less often from developing countries (Hoy et al., 2012).

Risk factors

One risk factor for LBP is obesity. Lack of or little physical activity may also contribute to LBP. In addition, studies indicate a possible correlation between LBP and smoking. Genetic factors are also important; 30 to 46% have a genetic basis depending on the type of LBP (Balagué et al., 2012). In addition, occupation may also be a risk factor for LBP, with particular exposure occurring in heavy lifters, among others (Fay and Black, 2024).

Diagnostic triage

The initial diagnosis of LBP includes assigning the patient to one of three main groups: specific spinal pathology, radicular syndrome, and non-specific LBP (Bardin et al., 2017; Oliveira et al., 2018). In addition, a group of patients with LBP as a symptom of another chronic disease, such as kidney stones, endometriosis, or pancreatitis, should also be distinguished (Vlaeyen et al., 2018). Specific spinal pathologies are the rarest cause of LBP (<1%). These disorders include vertebral fracture, malignant neoplasm, infection in the spine, axial spondyloarthropathies, and cauda equina syndrome (Bardin et al., 2017). The vertebral fracture can result from trauma, both high-energy and low-energy (Kabeer et al., 2023).

Fractures most often affect people with a history of trauma, older age, and chronic corticosteroid treatment. In addition, fractures more often involve the female gender (Han et al., 2023). Spontaneous vertebral fractures can affect patients with osteoporosis or malignancies (Kabeer et al., 2023). If a vertebral fracture is suspected, diagnostic imaging is necessary (Bardin et al., 2017). Infection of the spine is a rare cause of LBP (Kabeer et al., 2023). First, infectious causes should be excluded in patients with LBP accompanied by fever. In addition, infection in the spine is a consideration for patients with a positive history of immune disorders, intravenous drug use, and after a recent dental or spinal canal procedure such as epidural catheter placement.

Laboratory tests reveal rising inflammatory markers, but a definitive diagnosis depends on MR imaging of the spine, and the patient requires hospitalization (Urits et al., 2019; Kabeer et al., 2023). Spondyloarthropathies are a group of chronic inflammatory rheumatic diseases, most commonly affecting patients in the third decade of life with a positive family history of spondyloarthropathy. For this group of patients, inflammatory back pain is characteristic, including an insidious onset of pain, onset of complaints before age 40, morning stiffness that decreases after physical activity, lack of improvement after rest, and pain at night. In addition, back pain may coexist with inflammatory bowel disease, arthritis, or ankylosing spondylitis.

If a GP suspects axial spondyloarthropathy, the GP should make a referral to a rheumatology clinic for further diagnosis (Bardin et al., 2017; Sieper and Poddubnyy, 2017). Cauda equina syndrome (CES) is a rare cause of back pain. Most often, due to a massive lumbar herniation, there is pressure on the cauda equina roots in the lower part of the spinal canal. The patient requires an urgent referral to the hospital and an MRI scan. Immediate surgical treatment is necessary; delay may result in impaired bladder, bowel, or sexual function (Lavy et al., 2022). In <1% of patients, LBP is caused by a malignant tumor, and both primary and metastatic tumors are possible. Particular caution is essential in patients with a positive history of malignancy, unintentional weight loss, and the older population (Downie et al., 2013).

Radicular syndrome accounts for 5 to 10% of cases presenting with LBP in primary health care (Traeger et al., 2017). Radicular syndrome includes radicular pain, radiculopathy, and spinal stenosis (Bardin et al., 2017). Radicular pain, known as sciatica, involves LBP radiating to the lower limb. It is due to compression of the lumbosacral nerve roots, which form the sciatic nerve (L4-S1). The most common cause of compression is disc herniation, associated with degenerative changes of the spine or, less commonly, trauma (Jensen et al., 2019). Diagnosis is based primarily on medical history and physical examination; radiation of pain to the lower limb may suggest the diagnosis.

In addition, nerve tension tests for upper lumbar roots (prone knee bend) or lower roots (straight leg raise) are helpful. Radiculopathy results from damage to the root nerve and manifests as sensory disturbance and muscle weakness in the muscles innervated by the particular nerve. Depending on the location of the compression, the patient may present as a footdrop, for example, because of weakness in the tibialis anterior muscle, which is responsible for the dorsiflexion of the foot (Bardin et al., 2017). As with radicular pain, the most common cause of radiculopathy is disc herniation. Both conditions can co-occur (Hartvigsen et al., 2018).

On physical examination, the GP can observe sensory and muscular weakness and weak or absent knee and ankle jerks (Bardin et al., 2017). Lumbar spinal stenosis describes a spinal canal or foramina narrowing primarily due to degenerative changes in the lumbosacral spine (Hartvigsen et al., 2018). Presenting symptoms involve pain in the lower extremities and buttocks, which may or may not be associated with LBP. The most characteristic symptom is neurogenic claudication, which involves pain, numbness, and tingling in the lower back, buttocks, and lower extremities. It is triggered by walking, standing, or straightening the lumbar spine (Lurie and Tomkins-Lane, 2016). Meanwhile, rest and flexion of the lumbar spine bring relief.

If the primary care physician suspects lumbar stenosis, a doctor should refer the patient for further diagnostic imaging, especially MRI (Urits et al., 2019; Bardin et al., 2017). The last group includes patients with non-specific LBP; this is the largest group and accounts for 90-95% of cases with LBP in primary health care (Bardin et al., 2017). The diagnosis of non-specific LBP is associated with not finding an organic cause. Scientists consider that spinal structures, such as intervertebral discs or intervertebral joints, may be involved in the pathogenesis of pain. However, no clinical studies confirm this (Maher et al., 2017). Diagnosis relies on history, physical examination, and exclusion of red flags (Table 1); diagnostic imaging is routinely not recommended for non-specific LBP (Chenot et al., 2017).

Treatment

The management in primary health care for specific spinal pathology depends on the suspected cause. For example, a patient in whom a GP suspects cauda equina syndrome requires immediate referral to a hospital to a neurosurgical department (Bardin et al., 2017). Acute non-specific LBP is self-limiting in up to 90% of cases and resolves within 6 weeks (Itz et al., 2013). In treating non-specific LBP, educating the patient, encouraging physical activity, and continuing the current activity is extremely important (Stochkendahl et al., 2018). The American guidelines recommend that non-pharmacological management, including exercise, massage, and even acupuncture or yoga, should be implemented in the early stages of LBP. Incorporating cognitive-behavioral therapy and stress reduction may also be beneficial (Foster et al., 2018).

In the pharmacological treatment of non-specific LBP, non-steroidal anti-inflammatory drugs (NSAIDs) are primarily recommended to administer the least adequate amount for the minimum possible duration. Physicians may administer COX-2 Inhibitors if traditional NSAIDs are intolerant. If these drugs are ineffective, treatment also includes weak opioids such as tramadol. Evidence on the use of muscle relaxants such as methocarbamol is insufficient (Casser et al., 2016). Paracetamol is not a recommended drug treatment; this drug is ineffective in acute LBP (Jermini-Gianinazzi et al., 2023). The management of radicular pain with mild weakness is similar to non-specific LBP. It includes NSAID, initiation of physical activity, and physiotherapy. Also under consideration is the use of tricyclic antidepressants (TCAs) (Casser et al., 2016).

4. CONCLUSION

LBP is a common problem in primary health care. It more often affects female patients over the age of 50. The duration of symptoms is necessary; distinguishing acute and chronic LBP is possible based on this. In diagnostic triage, the most important thing is to allocate patients to one of the three groups. The further management decision should rely on the patient's history and physical examination, possibly expanded by diagnostic imaging and referral to specialists. In the GP's practice, it is essential to exclude red flags associated

with the risk of severe medical conditions and the need for urgent intervention. Management varies depending on the cause of pain; the most common reason is non-specific LBP. Among these patients, researchers emphasize the significant role of physical activity. Pharmacological treatment mainly includes NSAIDs. Most cases of LBP are self-limiting.

Table 1 Red flags in LBP

Red flag	Possible etiology	Diagnostics
I.V. drug abuse	Infection of the spine, epidural abscess	Immediate imaging: MRI, laboratory tests: CRP, CBC
Triad: Fever >38 °C, spine pain, neurological deficit	Infection of the spine, epidural abscess	Immediate imaging: MRI, laboratory tests: CRP, CBC
Recent spine procedure	Infection of the spine, epidural abscess	Immediate imaging: MRI, laboratory tests: CRP, CBC
Urinary/ bowel sphincter dysfunction	Cauda equina syndrome	Immediate imaging: MRI
Hyporeflexia/ areflexia	Cauda equina syndrome	Immediate imaging: MRI
History of cancer	Malignancy	Imaging, referral to oncologist
Prolonged use of corticosteroid drugs	Vertebral fracture	Imaging
Contusion or abrasion	Vertebral fracture	Imaging
Significant trauma	Vertebral fracture	Imaging

Authors' contribution

Aleksandra Anioła: Conceptualization, writing- rough preparation, investigation, methodology, project administration, writing - review and editing

Sandra Ważniewicz: Formal analysis, supervision, visualization, data curation, writing- rough preparation, writing - review and editing

Jagoda Saniuk: Methodology, data curation, resources, conceptualization, data curation, formal analysis

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Informed consent

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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