

2019-03-27

Low Back Pain, a Comprehensive Review: Pathophysiology, Diagnosis, and Treatment (poster)

Ivan Urits
Harvard Medical School

Aaron Burshtein
Hofstra-Northwell Health System

Medha Sharma
Harvard Medical School

See next page for additional authors

Follow this and additional works at: <https://escholarship.umassmed.edu/ssp>

Part of the [Anesthesia and Analgesia Commons](#), [Diagnosis Commons](#), [Medical Education Commons](#), [Medical Physiology Commons](#), [Musculoskeletal Diseases Commons](#), [Pain Management Commons](#), [Pathological Conditions, Signs and Symptoms Commons](#), and the [Therapeutics Commons](#)

Repository Citation

Urits, Ivan; Burshtein, Aaron; Sharma, Medha; Testa, Lauren; Gold, Peter A.; Orhurhu, Vwaire; Viswanath, Omar; Jones, Mark R.; Sidransky, Moises A.; and Kaye, Alan D., "Low Back Pain, a Comprehensive Review: Pathophysiology, Diagnosis, and Treatment (poster)" (2019). University of Massachusetts Medical School. *Senior Scholars Program*. Paper 268.
<https://escholarship.umassmed.edu/ssp/268>

This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in Senior Scholars Program by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.

Low Back Pain, a Comprehensive Review: Pathophysiology, Diagnosis, and Treatment (poster)

Authors

Ivan Urits, Aaron Burshtein, Medha Sharma, Lauren Testa, Peter A. Gold, Vwaire Orhurhu, Omar Viswanath, Mark R. Jones, Moises A. Sidransky, and Alan D. Kaye

Keywords

low back pain, diagnosis, pathophysiology, treatment

Comments

Lauren Testa participated in this study as a medical student as part of the Senior Scholars research program at the University of Massachusetts Medical School. Her work was presented on Senior Scholars Program Poster Presentation Day at the University of Massachusetts Medical School, Worcester, MA, on May 1, 2019.

Rights and Permissions

Copyright is held by the author(s), with all rights reserved.

¹ Department of Anesthesia, Critical Care, and Pain Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, 02215.
² Department of Orthopedic Surgery, Hofstra-Northwell Health System, Great Neck, NY 11021.
³ Valley Anesthesiology and Pain Consultants, University of Arizona College of Medicine-Phoenix, Phoenix, AZ, Creighton University School of Medicine, Omaha, NE
⁴ UT Health East Texas Physicians, Department of Anesthesiology, Tyler, TX, USA.
⁵ Louisiana State University Health Science Center, Department of Anesthesiology, New Orleans, LA, USA, 70112.
⁶ University of Massachusetts Medical School, Worcester, MA, 01604.

Purpose of Review

Low back pain encompasses three distinct sources: axial lumbosacral, radicular, and referred pain. Annually, the prevalence of low back pain in the general U.S. adult population is 10-30%, and the lifetime prevalence among U.S. adults is as high as 65-80%.

Recent Findings: Patient history, physical exam, and diagnostic testing are important components to accurate diagnosis and identification of patient pathophysiology. Etiologies of low back pain include myofascial pain, facet joint pain, sacroiliac joint pain, discogenic pain, spinal stenosis, and failed back surgery. In chronic back pain patients, a multidisciplinary, logical approach to treatment is most effective and can include multimodal medical, psychological, physical, and interventional approaches.

Summary: Low back pain is a difficult condition to effectively treat and continues to affect millions of Americans every year. In the current investigation, we present a comprehensive review of low back pain and discuss associated pathophysiology, diagnosis, and treatment.

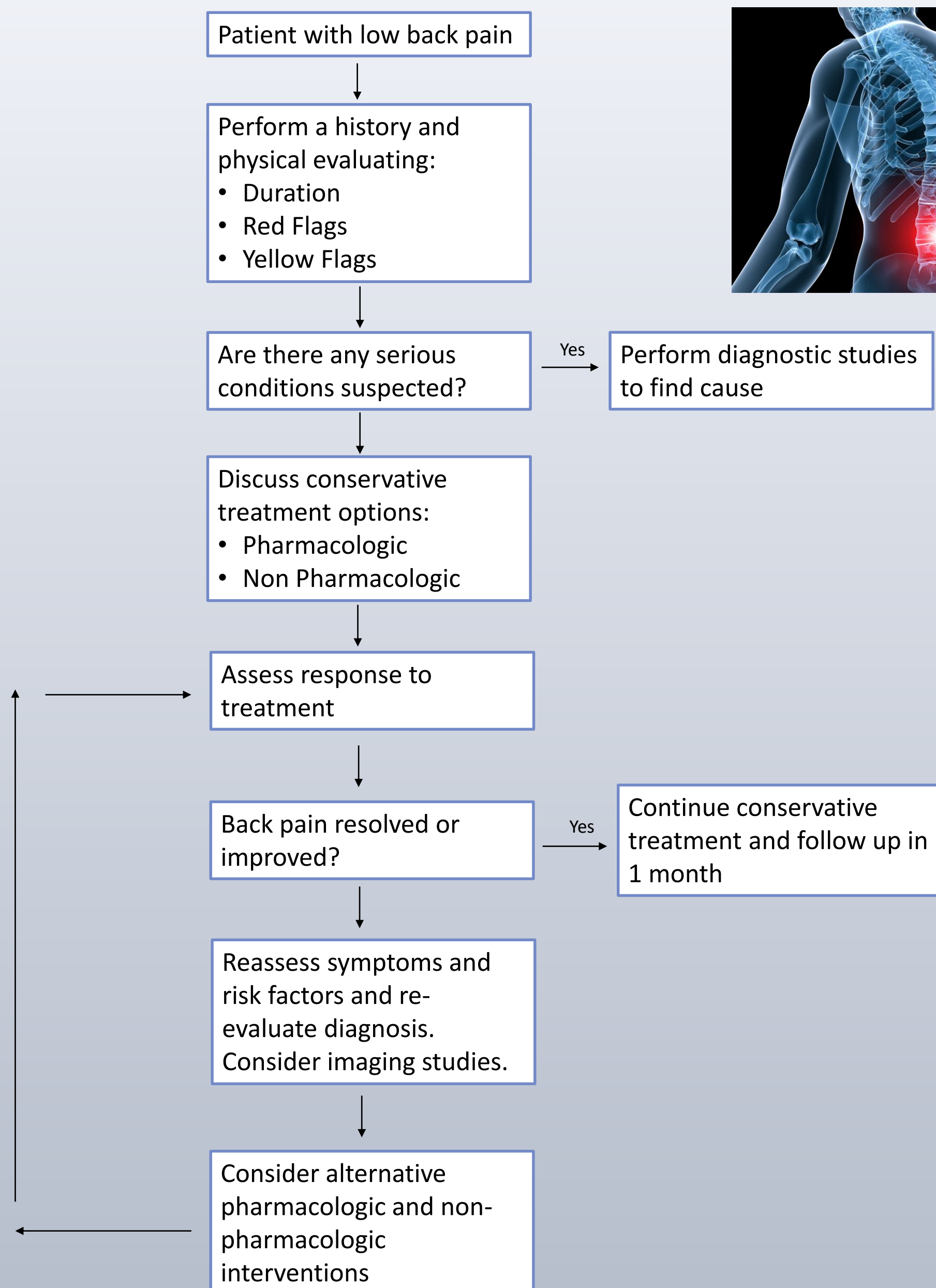
Overview of Low Back Pain

Low back pain encompasses three distinct sources: axial lumbosacral, radicular, and referred pain

- Axial lumbosacral back pain refers to pain in the lumbar, or L1-5 vertebral region, and sacral spine, or S1 to sacrococcygeal junction region.
- Radicular leg pain travels into an extremity along a dermatomal distribution secondary to nerve or dorsal root ganglion irritation.
- Referred pain spreads to a region remote from its source but along a non-dermatomal trajectory.

Chronicity: acute (<6 weeks), subacute (6-12 weeks), and chronic (>12 weeks) low back pain

Diagnostic and Therapeutic Approach to the Patient with Low Back Pain



Conclusions

Multidisciplinary approach to treatment:

- Lower back pain management varies from person to person, as not all patients respond to the same treatment approach, and no single intervention is generally completely effective for all patients.
- Consequently, limited trials of one or more interventions guided by evidence and effectiveness are utilized to manage the pain, while aiming to decrease overall costs.
- Pertinent courses of care include pharmacological treatments, psychological treatments, physical and rehabilitation treatments, complementary and alternative medicine approaches, and minimally invasive percutaneous approaches.

References

- Atlas SJ, Deyo RA. Evaluating and managing acute low back pain in the primary care setting. *J Gen Intern Med* 2001;16:120–131.
- Bogduk N. On the definitions and physiology of back pain, referred pain, and radicular pain. *Pain* 2009; 147:17–19.
- Chou R, Qaseem A, Snow V, Casey D, Cross JT, Shekelle P, et al. Diagnosis and treatment of low back pain: A joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med* 2007;147:478.
- Hoy D, March L, Brooks P, Blyth F, Woolf A, Bain C, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. *Ann Rheum Dis*;2014;73:968–74.
- Samanta J, Kendall J, Samanta A. 10-minute consultation: chronic low back pain. *BMJ* 2003; 326:535.

Acknowledgements

Thank you to the University of Massachusetts Medical School Senior Scholars Program for the opportunity to research and present my work.