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A best-evidence review of diagnostic procedures for neck and low-back pain

Sidney M. Rubinstein* DC, MSc
Research Fellow
EMGO Institute, VU University Medical Center, Van der Boechorststraat 7, 1081 BT Amsterdam, The Netherlands

Maurits van Tulder PhD
Professor of Health Technology Assessment
EMGO Institute, VU University Medical Center, Amsterdam, The Netherlands
Department of Health Economics & Health Technology Assessment, Institute of Health Sciences, Faculty of Earth & Life Sciences, Amsterdam, The Netherlands

This chapter aims to present an overview of the best available evidence on diagnostic procedures for neck and low-back pain. Relatively little is known about the accuracy of such procedures. Although most spinal conditions are benign and self-limiting, the real challenge to the clinician is to distinguish serious spinal pathology or nerve-root pain from non-specific neck and low-back pain. The use of valid procedures can assist the clinician in this aim. A search was conducted in PubMed to identify relevant systematic reviews and primary studies on diagnostic procedures for the neck and low back. A systematic review was included if at least two independent reviewers were used; a systematic procedure was followed for identifying the literature; and a methodological assessment was conducted. In the absence of systematic reviews, primary studies are reported. Systematic reviews were identified which evaluated evidence for diagnostic procedures in the following categories: history, physical examination, and special studies, including diagnostic imaging, diagnostic blocks, and facet and sacroiliac joint injections. In general, there is much more evidence on diagnostic procedures for the low back than there is for the neck. With regard to the history, a number of factors can be identified which can assist the clinician in identifying sciatica due to disc herniation or serious pathology. With regard to the physical examination, the straight-leg raise is the only sign consistently reported to be sensitive for sciatica due to disc herniation, but is limited by its low specificity. The diagnostic accuracy of other neurological signs and tests is unclear. Orthopaedic tests of the neck, such as Spurling's or the upper-limb tension test, are useful to rule a radiculopathy in or rule out, respectively. In patients 50 years of age or older, plain spinal radiography together with standard laboratory tests

* Corresponding author. Tel.: +31 20 444 8406; Fax: +31 20 444 6775.
E-mail address: sm.rubinstein@vumc.nl (S.M. Rubinstein).

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are highly accurate in identifying underlying systemic disease; however, plain spinal radiography is not a valuable tool for non-specific neck or low-back pain. There is strong evidence for the diagnostic accuracy of facet joint blocks in evaluating spinal pain, and moderate evidence for transforaminal epidural injections, as well as sacroiliac joint injections for diagnostic purposes. In conclusion, during the history, the clinician can accurately identify sciatica due to disc herniation, as well as serious pathology. There is sufficient evidence regarding the accuracy of specific tests for identifying sciatica or radiculopathy (such as the straight-leg raise) or certain orthopaedic tests of the neck. Plain spinal radiography in combination with standard laboratory tests is useful for identifying pathology, but is not advisable for non-specific neck or low-back pain.

Key words: neck pain; low-back pain; diagnosis; diagnostic procedures; review; red flags; yellow flags; psychosocial.

Neck and low-back pain are common and costly problems in Western society. In order to treat these conditions effectively, it is imperative to establish a correct diagnosis at the initial presentation. This initial diagnosis can pose some important challenges, however, because the clinician cannot distinguish with infallible accuracy between those patients with benign conditions and those with radicular pain or serious spinal pathology.

In the initial stage, the primary function of the history and examination is to distinguish those patients with pain of musculoskeletal origin from those with non-spinal or serious spinal pathology. Once this is accomplished, the next priority is to rule out those patients with nerve-root pain. The patient's pain and pattern of distribution will most probably suggest whether this is the case or not. All other cases should be classified as 'non-specific'. Although this seems quite fundamental, this diagnostic triage serves another function. By conducting a thorough history and physical examination, it is possible to evaluate the degree of pain and the functional disability of the patient. This serves to guide the clinician in a management strategy.

The purpose of this narrative review is to present the best evidence on the principal tools available to the clinician for establishing a correct working diagnosis, including the history, physical examination, and special studies consisting of diagnostic imaging, diagnostic blocks, facet joint or sacroiliac injections, and laboratory testing. By identifying accurate and useful diagnostic procedures for neck and low-back pain, the primary-care physician can make an informed decision regarding the management of these conditions. Where available, we present the results of systematic reviews, and where relevant we present the results of primary studies.

METHODS

Procedure

We searched the PubMed version of MEDLINE from 1997 for systematic reviews and relevant primary studies on diagnostic procedures for neck and low-back pain. Studies were identified by use of MESH terms or the following free text words: neck pain, low-back pain, diagnosis, radiculopathy, spinal diseases, and systematic review. In some cases, these search terms were also truncated in order to broaden the search. We excluded studies on whiplash, animal studies, and effectiveness studies of therapy. We did not place limits on the search regarding language. Details of the search are available from the corresponding author upon request. In addition, the references of all articles were scanned for relevant articles not identified during the search.