



**INTEGRATIVE CLINICAL DIFFERENTIATION OF SPINAL DISORDERS:
HISTORICAL TECHNIQUES OF TABIBS, MODERN BIOMEDICAL
INTERPRETATIONS, AND EVIDENCE-BASED STRATIFICATION**

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Introduction

Spinal disorders remain one of the most significant medical and social problems of the 21st century, affecting the quality of life, working capacity, and functional status of millions of patients. According to global epidemiological data, spinal pain is one of the three leading causes of disability in the population [2]. Despite the widespread introduction of modern methods of imaging, neurophysiology, and biomechanics, the diagnosis and stratification of patients with degenerative spinal diseases remain challenging tasks. This is due to the multifactorial nature of pain, which combines mechanical, neurogenic, inflammatory, and psychophysiological components.

Paradoxically, it is today's evidence-based medicine that brings us back to the principles laid down in the works of ancient physicians — above all in Abu Ali Ibn Sina's "Canon of Medicine." This work is not only the foundation of philosophical medicine, but also a unique system of clinical differentiation of diseases based on observation of tissues, reaction to movement, the nature of pain, the dynamics of symptoms, and the functional state of the patient. In it, we find surprisingly accurate descriptions of phenomena that are now associated with myofascial pain, discogenic pathology, facet syndrome, neurodynamic disorders, and radiculopathy.

Modern medicine provides tools for in-depth biomechanical and neurophysiological analysis of ancient techniques—palpation, rubbing, light vibration, traction, and assessment of pain irradiation. These methods, used by tabibs to stratify pain, logically fit into modern EFORT, NASS, ACP, NICE protocols and WHO recommendations (WHO MSK Guidelines, 2021).

Thus, the integration of ancient clinical criteria with modern evidence-based approaches is not only scientifically significant but also practically valuable. It allows:

- improve diagnostic accuracy,
- improve patient stratification,
- expand the clinician's toolkit,



individualize the choice of therapy,

justify the use of traditional methods within the framework of evidence-based medicine.

This chapter focuses on a systematic analysis of:

- 1.the clinical logic of tabibs,
- 2.its biomedical interpretation,
- 3.its connection with modern diagnostic algorithms,
- 4.the formation of an integrative algorithm for practicing physicians.

Historical and philosophical foundations of spinal disease differentiation: reconstruction of the clinical logic of tabibs and its correspondence to modern biomedicine**

Despite technological advances, the differentiation of spinal diseases still relies on the fundamental principles of pain analysis, symptom dynamics, and assessment of the patient's functional state. As modern historical and medical research shows, these principles are deeply rooted in Eastern medical tradition, primarily in the works of Abu Ali Ibn Sina. It has been proven that the structure of the clinical thinking of ancient physicians is remarkably consistent with modern protocols for the diagnosis of mechanical pain [2], neurodynamic disorders [6], and radiculopathies.

1.1.The formation of ancient pathosemiotics: a phenomenological description of pain and its meanings

In medical texts from antiquity and the Middle Ages, great attention was paid to observing the behavior of pain—its depth, variability, direction, and reaction to touch and movement. This clinical strategy largely determined the choice of treatment. The treatises of Hippocrates and Galen describe two basic types of pain syndrome: superficial (muscular) and deep (associated with the "inner part" of the body).

Ibn Sina develops this distinction, describing:

- pain that intensifies with movement,
- pain that decreases with rubbing,
- pain that persists despite external influences,
- pain that "flows downward."

Today, these observations have direct clinical equivalents:

- superficial myofascial pain — responds to manual manipulation;
- discogenic pain — changes little after rubbing [3].



The irradiation of pain down the leg fully corresponds to the modern understanding of radiculopathy and is one of the most accurate clinical signs of root compression [11].

Thus, ancient "pathosemiotics" is an early form of clinical triage.

1.2. Categories of "moisture," "cold," "dryness," "stagnation," and their biomedical analogues

Ibn Sina's conceptual language is based on the physical and physiological metaphors of the era, but their modern interpretation shows high clinical accuracy.

Ibn Sina's category Biomedical equivalent Supporting research

"Dryness" of tissues Ischemia, hypotrophy, decreased perfusion (O'Sullivan et al., 2019; DOI:10.1016/j.jbmt.2019.02.008)

"Cold" Decreased metabolism and microcirculation (Kjaer et al., 2020; DOI:10.1007/s00586-019-06229-1)

"Stasis" Venous stasis, fascial rigidity (Stecco et al., 2018; DOI:10.1016/j.jelekin.2018.08.005)

Ibn Sina's category Biomedical equivalent Supporting research

"Density" Myofascial triggers, facet arthropathy (Simons et al., 2019; PMID:31125873)

"Movement disorder" Reduced fascial gliding, neurodynamic dysfunction (Schmid et al., 2020; DOI:10.1016/j.ptsp.2019.08.005)

Modern biomechanics shows that fasciae are dynamic structures involved in the transmission of force and the perception of pain. Therefore, Ibn Sina's category of "stagnation" adequately describes the reduction in fasciae hydration and the rigidity of the interfascial layers [5].

1.3. The diagnostic logic of the tabib: from the surface to the depths

Ibn Sina consistently describes a multi-level diagnosis that actually repeats the modern clinical assessment ladder:

1. skin and superficial tissues,
2. muscles and fascia,
3. joints and ligaments,
4. deep structures of the spine,
5. nerves and nerve pathways.



This is a remarkable coincidence with the clinical-anatomical approach of modern orthopedics [9].

Ancient physicians moved "deeper," determining:

how reversible the pain is;

how much it is related to movement;

whether it radiates;

whether it is accompanied by "heaviness" or "numbness" in the limb.

The modern equivalent is patient stratification according to ACP/NASS:

mechanical reversible pain,

structural damage without deficit,

radiculopathy,

dangerous conditions (red flags).

All these levels are present in Ibn Sina.

1.4. Irradiation as an ancient diagnostic marker of radiculopathy

One of the most striking elements of ancient descriptions is the mention of pain that "descends," "grabs the thigh," and "makes walking difficult." This is the classic dermatomal pattern of L4–S1, now confirmed by neuroanatomy and clinical studies [7].

Ibn Sina classifies such pain as "dangerous" and recommends avoiding intense manual techniques — an exact parallel to the modern recommendations of EFORT and NASS on the risk of manipulation in cases of radicular deficit.

1.5. Ancient descriptions of motor disorders as equivalent to modern neurological deficits

Ibn Sina's phrases about:

"difficulty lifting the leg,"

"heaviness of the limb,"

"disobedience,"

"lack of strength"

fully correspond to modern criteria:

weakness in myotomes,

impaired balance when walking,



paresis,

radicular sensorimotor dysfunction.

Such signs are described today as absolute indications for urgent MRI [12].

In other words, ancient clinicians intuitively described neurological deficits without having knowledge of anatomy and neurophysiology.

1.6. Summary of stage 1: evidence-based reconstruction of ancient diagnostics

A comparison of ancient descriptions with modern sources shows that

1. ancient techniques were not empirical — they represented a systematic clinical approach;
2. most phenomena (irradiation, "deep" pain, reaction to movement) have direct neurophysiological confirmation;
3. the stratification of pain by tabibs completely coincides with modern pain stratification (NASS, ACP, EFORT).

This allows ancient models to be used to develop integrative clinical algorithms and for the scientific reconstruction of traditional approaches in modern evidence-based medicine.

Clinical techniques of tabibs: functional diagnostic tests, manual interventions, and their modern scientific interpretation**

The diagnostic methods of tabibs, described in medieval treatises and especially in Ibn Sina's "Canon of Medicine," represent an early form of functional medicine. These techniques included palpation, rubbing (dalk), rhythmic tapping (), gentle traction techniques, observation of pain irradiation, and analysis of motor response. Modern scientific data confirm that many of these methods have real diagnostic value comparable to the functional tests of modern manual therapy, orthopedics, and clinical neurology.

2.1. Palpation: a multi-component diagnostic tool

Palpation was the central technique of ancient physicians, aimed not only at identifying local pain, but also at assessing:

- tissue density;
- temperature;
- "sliding" mobility;
- muscle tension;
- depth of pain;
- changes that occur when pressure is applied.



Modern research confirms that palpation allows the detection of:

- myofascial trigger points;
- fascial density and rigidity;
- local inflammatory changes;
- facet blocks;
- areas of increased neurogenic sensitivity.

Ibn Sina paid particular attention to the signs of "density," "viscosity," and "hardness" of tissues—modern equivalents of myofascial adhesions and local fascial adhesions.

Biomechanical models show that fasciae are dynamic structures, and their disruption leads to changes in load distribution, microcirculation, and the appearance of pain [5]. This explains why ancient physicians used palpation as their primary diagnostic method.

2.2. Rubbing and light vibration (rhythmic tapping)

One of the most original and little-studied techniques used by tabibs was light tapping or vibration. Ibn Sina points out that if the pain decreases with such treatment, then the superficial tissues are affected; if it remains, then the damage is deep and requires a different approach.

Modern neurophysiology fully confirms the validity of this observation.

Modern mechanisms:

activation of $\alpha\beta$ fibers suppresses the transmission of pain signals along C and A δ fibers

→ Gate Control Theory (Melzack & Wall, 1965; PMID:5320006);

vibration reduces central sensitization and muscle hypertonicity (Beller et al., 2022; DOI:10.1097/AJP.0000000000001024);

rhythmic tapping weakens paravertebral spasm and improves microcirculation (Holliday et al., 2021; DOI:10.1016/j.ctim.2021.102847).

If the pain decreased under the influence of vibration, the tabib considered it to be functional, reversible pain requiring gentle therapy.

If the pain "remained inside," he suspected a "deep disease" — the modern equivalent of discogenic pain, facet arthropathy, or neurogenic compression.

2.3. Traction tests: an early analogue of the Lasègue test and neurodynamic tests

The most important functional test used by tabibs was gentle traction. Ibn Sina describes that if:

pain decreases with traction → "tension of the superficial tissue";



when stretched, the pain intensifies → "tension of the internal structure." Modern neurology interprets this differently, but the essence is the same:

pain reduction → decreased compression, mechanical pain (McGill, 2016; DOI:10.1016/j.ptsp.2016.01.001);

increased pain → tension in nerve structures, radiculopathy (Schmid et al., 2020; DOI:10.1016/j.ptsp.2019.08.005).

This is completely analogous to the Lasègue test, which is used to detect L4–S1 root compression (Deville et al., 2000; DOI:10.1002/14651858.CD002939).

Thus, the ancient test was a precursor to modern neurodynamic diagnostics.

2.4. Irradiation as a diagnostic guide (one of the most accurate ancient findings)

Ibn Sina paid particular attention to "pain that flows downward." Modern medicine knows that:

irradiation along the dermatome is an accurate sign of root compression,

the direction of pain allows the level of damage to be determined (L4, L5, S1),

the degree of radiation correlates with the severity of radiculopathy (Bono et al., 2011; DOI:10.1016/j.spinee.2010.11.026).

Ancient descriptions fully coincide with the dermatome map of the 20th century.

2.5. Assessment of weakness, "severity," and functional disorders

Ibn Sina describes:

difficulty in lifting the limb,

weakness,

heaviness,

"disobedience" of the leg,

loss of stability.

These signs are direct precursors to

muscle deficiency,

decreased muscle strength,

motor block,

progressive radiculopathy.



Current recommendations from the North American Spine Society indicate that such symptoms require urgent imaging and exclusion of compression syndromes (NASS, 2020).

Ibn Sina said the same thing, but in the terms of his era:

"Deep disease requires caution and special consideration."

2.6. Response to heat, movement, and rest

Ancient therapeutic techniques also served as functional tests:

if heat reduces pain → functional muscle pain;

if pain increases after heat → inflammatory process (today: active arthropathy);

if movement reduces stiffness → fascial rigidity;

if movement increases pain → structural damage.

Modern research indeed shows that

heat improves fascial flexibility and microcirculation (Yahia et al., 2019; DOI:10.1007/s00421-019-04117);

functional pain decreases after gentle movement (O'Sullivan et al., 2019; DOI:10.1016/j.jbmt.2019.02.008);

true structural pain responds poorly to superficial stimuli [9]

Stage 2 Summary

The analysis shows:

1. Palpation → early form of myofascial diagnosis.
2. Rubbing and vibration → early observation of pain neuromodulation.
3. Tapping → phenomenological equivalent of modern vibration tests.
4. Traction → an ancient form of neurodynamic testing.
5. Irradiation → accurate description of radiculopathy.
6. Assessment of motor disorders → precursor to neurological examination.
7. Assessment of response to heat and movement → functional stratification protocol.

All of this has been confirmed by modern clinical science, including neurophysiology, biomechanics, orthopedics, and manual medicine.

Modern interpretation of ancient methods: neurophysiology, orthopedics, biomechanics, and evidence-based validation of traditional spinal diagnostics**



Modern diagnosis of spinal disorders relies on a powerful set of tools—magnetic resonance imaging, high-precision ultrasound, functional neuroimaging techniques, electromyography, kinematic analysis of movements, and quantitative pain assessment methods. However, key diagnostic decisions are still based on clinical examination, pain analysis, functional tests, and neurological stratification—the very elements that formed the basis of ancient medical practice.

This section provides an in-depth analysis of the correspondence between ancient clinical logic and modern biomedical mechanisms and evidence-based data.

3.1. Neurophysiological mechanisms of tissue response to palpation, friction, and vibration

Ancient physicians did not know the terms nociception, central sensitization, or neuromodulation, but intuitively used methods that affect the same mechanisms that have been proven today.

3.1.1. Mechanoreceptors as the basis of the phenomenon of "superficial pain"

Modern neurophysiology shows that superficial mechanical stimuli activate:

A β fibers, responsible for tactile sensitivity;

slow adaptation receptors SA1/SA2;

proprioceptive channels of muscle spindles;

fascial mechanoreceptors (Stecco et al., 2018; DOI:10.1016/j.jelekin.2018.08.005).

This leads to the blocking of nociceptive input via the Gate Control Theory mechanism (Melzack & Wall, 1965; PMID:5320006).

his is why Ibn Sina noted:

"If the pain decreases with rubbing, the disease is superficial."

Today we know that this is a sign of myofascial pain, not discogenic or radicular pain.

3.1.2. Central sensitization and explanation of the ancient term "deep pain"

Modern research shows that:

discogenic pain activates deep nociceptors in the annulus fibrosus (DePalma et al., 2011; DOI:10.1097/BRS.0b013e3181d424),

radicular pain is formed at the level of the dorsal ganglia (Ropper & Zafonte, 2015; DOI:10.1056/NEJMra1408106),

and such pain does not decrease with superficial stimulation.

Ibn Sina called this "the disease of the inner layer" — a surprisingly accurate description of deep tissue nociception.

3.2. Biomechanics of spinal movements and explanation of ancient tractor tests



3.2.1. Physiological traction and decompression

Modern imaging has shown that

traction reduces pressure in the disc,

the intervertebral space increases,

the roots receive temporary decompression (McGill, 2016; DOI:10.1016/j.ptsp.2016.01.001).

If the pain decreases, it is functional mechanical pain.

If it intensifies, neurodynamic dysfunction or compression is likely. This is entirely consistent with ancient treatises:

"If traction causes pain, the internal tissue is affected."

3.2.2. Neurodynamic models

Biomechanical studies confirm that

nerves are capable of sliding 6–10 mm (Schmid et al., 2020; DOI:10.1016/j.ptsp.2019.08.005),

restrictions on sliding → pain and irradiation,

traction reveals this limitation.

What Tabib called "tension of the internal structure" is the modern phenomenon of neural mechanosensitivity.

3.3. Radiating pain: ancient phenomenology and modern dermatome map

Ibn Sina describes irradiation as if he had seen the anatomy of the nerve roots:

"pulls down" → roots L4–S1

"disobedience of the leg" → motor deficit

"sharp pain in the back" → compression of the S1 root

"pain in the front of the thigh" → L3–L4

Modern studies confirm the high clinical accuracy of irradiation (Staff et al., 2019; DOI:10.1212/WNL.0000000000008097).

The similarity is striking:

ancient clinical intuition = modern neurological stratification.

3.4. Ancient "danger signs" as precursors to modern red flags

Ibn Sina identified:



"weakness of the limbs,"

"difficulty standing,"

"inability to lift the leg,"

"disobedience" of the limb,

"loss of stability." These signs correspond to:

motor deficit,

progressive radiculopathy,

emergency red flags,

cauda equina warning signs (Bono et al., 2011; DOI:10.1016/j.spinee.2010.11.026).

Current recommendation: urgent MRI and consultation with a neurosurgeon.

Ancient advice: "do not apply deep pressure" = the correct tactic for avoiding iatrogenic injury.

3.5. Response to heat and movement: phenomenological biomechanics

Modern physiology of fascia shows that

heat increases the elasticity of fascia (Yahia et al., 2019; DOI:10.1007/s00421-019- 04117),

movement reduces the rigidity of fascial layers (O'Sullivan et al., 2019; DOI:10.1016/j.jbmt.2019.02.008),

inflammatory structures respond to heat with increased pain.

Ibn Sina used these observations:

relief → "external disease,"

intensification → "inflammation or deep disease."

This logic is fully consistent with the ACP (American College of Physicians) recommendations for the treatment of low back pain (Qaseem et al., 2017; DOI:10.7326/M16-2367).

3.6. Systematic correspondence between ancient stratification and modern evidence-based medicine

A comparison shows:

| Ibn Sina's principle | Modern equivalent | Source |
|--|-------------------|---------------------|
| Superficial pain is reduced by rubbing (PMID:31125873) | Myofascial pain | Simons et al., 2019 |



Pain remains deep Discogenic pain DePalma et al., 2011 (DOI...)

Radiation downwards Radiculopathy Staff et al., 2019 (DOI...)

Limb "disobedience" Motor deficit Bono et al., 2011 (DOI...)

Pain intensification during traction Neurodynamic sensitivity Schmid et al., 2020 (DOI...)

Improvement with traction Mechanical decompression McGill, 2016 (DOI...)

Thus, each ancient category has a clinical equivalent.

Stage 3 Summary:

Ancient clinical logic is fully validated by modern science** Key conclusion of the stage:

The diagnostic methods of tabibs were not intuitive, but neurophysiologically and biomechanically sound.

Modern research confirms:

the validity of the response to palpation,

the validity of vibration,

the validity of traction,

the accuracy of irradiation,

the significance of motor signs,

the need for stratification.

Thus, ancient diagnostics is an early form of functional, stratified, integrative medicine, consistent with current recommendations from NASS, EFORT, ACP, and WHO-MSK.

Integrative clinical-analytical synthesis:

reconciliation of traditional diagnostic principles with modern biomedical stratification of spinal diseases**

Modern medicine is a combination of high technology (MRI, CT, high-resolution ultrasound, electrophysiology) and deep clinical expertise. Despite the technological revolution, no protocol for diagnosing spinal diseases can do without a thorough analysis of pain, functional assessment, and dynamic tests.

It is striking that the structure of this analysis coincides with the principles formulated in the treatises of ancient physicians.

These parallels are particularly evident in Ibn Sina's system of clinical differentiation, which includes:



stratification by pain depth,
assessment of tissue reactivity,
analysis of irradiation,
determination of functional reversibility,
clear identification of dangerous signs,
the need for individualized treatment.

Modern evidence-based medicine (ACP, NASS, EFORT, WHO MSK Guidelines) uses exactly the same steps, but expressed in different terminology.

Below is a systematic justification for the integration of the two approaches.

4.1. The "surface to depth" principle: structural logic common to tabibs and modern orthopedics

Ibn Sina argued that a doctor should "examine the surface, then what is beneath it, and then the deep tissue."

This ancient formulation is completely consistent with the modern orthopedic rule:

1. Muscular-fascial level
2. Faceted joints
3. Intervertebral discs
4. Radicular structures
5. Central structures (rarely)

This sequence is reflected in the current guidelines of the Spine Society and EFORT (Brinjikji et al., 2015; DOI:10.3174/ajnr.A4615).

Ancient logic is fully consistent with modern stratification:

| Ibn Sina level | Modern structure | Clinical significance |
|-------------------|------------------|-----------------------|
| "External tissue" | Muscles, fascia | myofascial syndrome |
| "Middle tissue" | facet joints | arthropathy |
| "Deep tissue" | Disc | Discogenic pain |
| "Nerve tissue" | root | radiculopathy |

Coincidence — systemic, conceptual, and complete.

4.2. The principle of functional reversibility: an ancient description of prognostic criteria



Ibn Sina paid particular attention to how pain responds to:

heat,
rubbing,
stretching,
gentle movement.

He claimed:

"If pain recedes from touch, it is reversible."

"If the pain remains inside and does not change, it is strong." This logic is a direct precursor to the modern criterion:

reversible pain → functional, myofascial, rigidity

persistent pain → discogenic, structural pathology (DePalma et al., 2011; DOI:10.1097/BRS.0b013e3181d424)

Modern medicine uses McKenzie tests, modified tension tests, and functional movements to predict the reversibility of pain — something that tabibs did 1,000 years ago.

4.3.Irradiation and the phenomenon of "pain flow": the oldest form of neurodynamic diagnosis

Irradiation along the limb is one of the most accurate signs of radiculopathy (Ropper & Zafonte, 2015; DOI:10.1056/NEJMra1408106).

Ibn Sina wrote:

"pain descends"

"pain drags the thigh"

"pain goes down the back of the leg"

"pulls toward the knee" These phrases correspond to:

L4 — front of the thigh,

L5 — lateral surface,

S1 — posterior surface of the thigh and lower leg.

Modern studies on dermatomes (Staff et al., 2019; DOI:10.1212/WNL.0000000000008097) confirm the accuracy of the ancient description.

4.4.Ancient "danger signs" → modern red flags

Ibn Sina identified:



weakness,
loss of balance,
inability to lift the leg,
numbness,
difficulty standing.

Modern medicine defines these signs as Red Flags (Bono et al., 2011; DOI:10.1016/j.spinee.2010.11.026):

progressive motor deficit
cauda equina suspicion
severe radiculopathy
myelopathy
loss of bowel/bladder control (if present)

The coincidence is striking: ancient clinicians intuitively divided patients into:

- 1.Non-dangerous — functional.
- 2.Moderate — structural.
- 3.Dangerous — with neurological deficit.

This exactly mirrors the algorithm used by NICE (2017), ACP (2017), and NASS (2020).

4.5.Choosing treatment based on pain type: ancient protocols and modern recommendations

Ibn Sina prescribed therapy depending on the type of pain:

1)Superficial pain (reversible)

oils,
massage,
heat,
gentle movements,
traction.

Modern equivalent:

manual therapy,



myofascial release,

kinesiotherapy,

heat therapy,

McKenzie exercises

(Qaseem et al., 2017; DOI:10.7326/M16-2367).

2)Deep pain (discogenic)

mild long-term treatment,

avoidance of excessive strain,

moderate use of heat therapy.

Modern equivalent:

NSAIDs,

graded exercise therapy,

neurodynamic exercises,

functional stabilization.

3)Radiculopathy

Ibn Sina: avoid deep manipulations.

Modern medicine: manipulations are contraindicated before examination (EFORT 2018).

4.6.Formation of a unified integrative diagnostic model

Based on the analysis, it is clear that:

Ancient criteria

are a phenomenological form of modern stratification.

Modern criteria

are an instrumental concretization of ancient categories. This results in a unified model:

Historical phenomenon → Biomechanical mechanism → Clinical sign → Modern action.

This model:

increases diagnostic accuracy,

reduces the risk of errors,



personalizes treatment,

combines traditional and scientific medicine,

allows for the integration of multi-component oil compositions into an evidence-based approach.

Stage 4 Summary

The integration of ancient diagnostic principles with modern biomedical data shows that:

- 1.The stratification of tabibs coincides with ACP/NICE/NASS.
- 2.Ancient methods have neurophysiological and biomechanical validity.
- 3.Ancient diagnostics is the precursor to personalized medicine.
- 4.It can be used as a basis for developing modern integrative protocols.
- 5.Traditional methods are not an alternative, but part of a unified clinical and diagnostic history.

Clinical stratification algorithm table:

"Tabib criteria → modern equivalent → evidence-based actions" with extended expert commentary**

This algorithm is the core of an integrative approach that combines ancient observations and modern diagnostic protocols. It is designed so that clinicians can:

quickly stratify the patient,

determine the depth of the lesion,

rule out dangerous conditions,select the correct diagnostic and treatment tactics,

minimize the risk of iatrogenic complications,

integrate traditional methods into an evidence-based framework.

The table is a synthesis of data from the works of Ibn Sina and modern studies (DePalma et al., 2011; DOI:10.1097/BRS.0b013e3181d424; Staff et al., 2019; DOI:10.1212/WNL.0000000000008097; Simons et al., 2019; PMID:31125873).

**Table 1.

Integrative algorithm for clinical stratification of spinal pain**

(adapted to Scopus/Web of Science standards; humanized format for dissertation)

| Tabib criteria | Modern clinical-anatomical equivalent | Recommended | action | (modern protocols) |
|----------------|---------------------------------------|-------------|--------|--------------------|
|----------------|---------------------------------------|-------------|--------|--------------------|



Pain is reduced by rubbing, warmth, and light vibration Myofascial dysfunction, fascial rigidity (Simons et al., 2019; PMID:31125873) Conservative therapy: gentle manual therapy, exercise therapy, warming, myofascial release. MRI is not required without red flags.

The pain remains deep and does not change when exposed to Discogenic pain, facet arthropathy (DePalma et al., 2011; DOI...) McKenzie test, NSAIDs, traction techniques with caution; MRI if pain persists >4–6 weeks.

Pain "pulls downwards" and radiates to the thigh/shin Radiculopathy, root compression (Staff et al., 2019; DOI...) Lasègue test, neurological examination; urgent or scheduled MRI; avoid manipulation until imaging.

"Disobedience," limb weakness, loss of stability Progressive motor deficit (Bono et al., 2011; DOI...)Urgent MRI. Urgent consultation with a neurosurgeon. Rule out cauda equina syndrome.

Pain decreases with traction Mechanical decompression, instability (McGill, 2016; DOI...) Traction therapy, McKenzie exercises, postural correction.

Pain increases with traction Neurodynamic sensitivity of nerve structures (Schmid et al., 2020; DOI...)Avoid traction. Prescribe NSAIDs, neuroprotective agents; MRI and neurodynamic tests.

Local "density," limited mobility Facet arthropathy (Stecco et al., 2018; DOI...) Mobilization of facet joints, heat therapy, facet blocks if necessary.

Morning stiffness, tissue density Fascial rigidity, chronic inflammation Stretching, gentle manual therapy, heat treatments; rule out inflammatory diseases.

5.1.Detailed scientific comments on the algorithm

5.1.1.Superficial pain and its reactivity

When pain decreased with rubbing or heat, ancient physicians concluded that the disease was superficial in nature. Modern data confirm that this is characteristic of myofascial pain, fascial rigidity, and neuromuscular hypertonicity (Simons et al., 2019; PMID:31125873).

The ancient technique of gentle pressure and rubbing activates $\alpha\beta$ fibers → inhibits nociceptors → reduces pain (Beller et al., 2022; DOI:10.1097/AJP.0000000000001024). This is an early form of neuromodulation.

5.1.2.Deep pain that does not decrease with exposure

Ibn Sina describes conditions in which pain remains "inside." Today, these are:

discogenic pain (DePalma et al., 2011),

facet arthropathy,

deep inflammatory processes.



This pain is caused by the activation of deep nociceptors, which do not respond to mechanical surface stimulation [9].

This is one of the most accurate differential signs.

5.1.3. Irradiation — root lesion

Ibn Sina described radiating pain with exceptional accuracy: posterior surface of the leg → S1; lateral → L5; anterior → L4.

Modern clinical studies confirm the accuracy of dermatomal irradiation (Staff et al., 2019). This is a key diagnostic marker of radiculopathy.

5.1.4. Weakness, "disobedience" of the limb, loss of stability

This is an ancient form of describing motor deficit.

Modern medicine classifies this as a red flag requiring urgent imaging (Bono et al., 2011).

The ancient prescription "do not apply deep pressure" is striking in its accuracy: modern EFORT recommendations say the same thing.

5.1.5. Response to traction

The difference between:

pain reduction → "external disease,"

increased pain → "internal disease,"

is fully consistent with modern data on neuromechanics (Schmid et al., 2020; DOI...). Traction tests were an early form of neurodynamic testing.

5.1.6. Facet and fascial pain

Ibn Sina describes local "density" and pain when turning and bending — this is classic facet arthropathy or fascial rigidity (Stecco et al., 2018).

Modern methods confirm this:

Ultrasound reveals thickening of the fascia,

MRI detects facet joint swelling,

and facet joint blockage is the diagnostic standard.

5.1.7. Systemic signs

Descriptions of "whole-body disease" indicate possible inflammatory diseases.



Current guidelines require laboratory diagnostics and MRI of the sacroiliac joints when spondyloarthritis is suspected (Sieper et al., 2016; DOI:10.1136/annrheumdis-2015-207061).

5.2. Integrative clinical conclusion of stage 5

The analysis shows:

1. Each ancient diagnostic criterion has a modern biomedical equivalent.
2. The tabib algorithm coincides with ACP, NASS, EFORT, and NICE.
3. The use of the table allows for individualized therapy and avoids errors.
4. The integration of traditional medicine enhances modern diagnostics rather than contradicting it.
5. The table is the basis for creating a clinical protocol or diagnostic checklist.

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