Case Series

THE IMPORTANCE OF THE METHOD IN THE APPLICATION OF GUIDELINES AND BEST PRACTICES

A. Beltramello[1], S. Miglio[2], F. Maffezzoni[2], M. Bonetti[3]

[1]Department of Medicine and Surgery, University of Verona, Policlinico "G. B. Rossi", Verona, Italy
[2]Oberdan Specialist Outpatient Clinic, Brescia, Italy
[3]Department of Neuroradiology Istituto Clinico Città di Brescia, Brescia, Italy

*Correspondence to:
Alberto Beltramello, MD
Department of Medicine and Surgery,
University of Verona,
Policlinico "G. B. Rossi",
Piazzale L. A. Scuro 10,
37134 Verona, Italy
e-mail: alberto.beltramello@mail.azosp.vr.it

ABSTRACT

In recent decades, the healthcare profession in Italy has undergone significant legislative transformations that define professional roles, rights, duties, and the ethical and legal responsibilities of healthcare workers. This study underscores the crucial importance of Evidence-Based Medicine in clinical practice, promoting its adoption to enhance patient safety and treatment efficacy. The impact of cognitive biases on healthcare decisions is explored, highlighting their contribution to diagnostic errors and the risk of malpractice. Through two clinical cases, the practical application of Bayesian methods in diagnosing complex conditions is illustrated, demonstrating how systematic analysis can lead to accurate outcomes and reduce uncertainty. Furthermore, the importance of adhering to current regulations, such as the Gelli-Bianco Law, is emphasized, as they provide a framework for improving the quality of care and safeguarding patient rights. Ultimately, the integration of scientific methodologies, patient-centered communication, and a robust legislative framework is essential for achieving high-quality care in the contemporary context, contributing to improved clinical outcomes and the protection of patient rights.

KEYWORDS: *healthcare workers, malpractice, best practice, care, patients, legislative framework, communication*

INTRODUCTION

Every healthcare professional, within their clinical practice, is faced with numerous choices aimed at ensuring effective care pathways. The criteria guiding these choices are influenced by multiple variables of which the professional must be aware. The adoption of clinical-care protocols based on scientific evidence (Evidence-Based Medicine - EBM), which also considers the bio-psycho-social characteristics of the patient, represents an essential element in ensuring the safety and effectiveness of treatments while making them consistent with the clinical needs of patients (1-10). The adoption of EBM is not only a strategic choice to ensure high standards of care but also a deontological and regulatory imperative. Healthcare professionals have the responsibility to provide safe and high-quality care, which implies the use of the best available scientific evidence (11).

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This approach not only promotes transparent communication with patients, allowing them to participate actively in the decision-making process regarding their care, but it also minimizes the risk of malpractice. In a regulatory context where the quality of healthcare services is scrutinized increasingly closely, adhering to evidence-based practices becomes essential for protecting the profession and safeguarding patients' rights (12-15).

When these needs are not adequately met, the medical and social consequences can be significant. In recent years, the issue of medical malpractice has garnered growing attention in the Italian healthcare landscape, with a continually rising number of legal actions against physicians each year, resulting in costs for hospital systems that exceed 10 billion euros in compensation for therapeutic and diagnostic errors (16, 17).

The importance of a scientific method in clinical practice lies in its ability to systematize the decision-making process, reducing the impact of cognitive biases-systematic errors in thinking that can influence the judgment and behavior of professionals—and increasing consistency in the provided care (18-24). Therefore, it is essential that the following principles coexist at the foundation of professional action:

1. safety: it is crucial to prevent patients from experiencing harm from treatments intended to help them;
2. effectiveness: services based on scientific evidence must be provided to those who can benefit from them while avoiding the administration of treatments to individuals who would not gain an advantage;
3. patient-centered care: care must be respectful and appropriate to the preferences, needs, and values of each individual user, ensuring that clinical decisions are guided by their values;
4. timeliness: it is important to reduce potentially harmful waits and delays for both those receiving care and those providing it;
5. efficiency: it is essential to avoid waste, particularly of resources, materials, ideas, and energies;
6. equity: it is fundamental to ensure a quality of care that is independent of the personal characteristics of the patient, such as gender, ethnicity, geographical origin, and socio-economic status (25).

The primary objective of this study is to analyze the importance of the scientific method, highlighting the necessity of adopting an EBM approach as an appropriate methodology for reducing clinical errors and improving patient outcomes. To this end, we aim to identify and recognize the cognitive biases that may influence healthcare professionals' decisions.

Additionally, we intend to provide an in-depth analysis of the current legislation regarding professional liability in Italy, examining the relevant regulatory references. This aspect is crucial for understanding the legal context in which healthcare professionals operate, encouraging them to integrate scientific principles into their daily clinical practice.

Finally, we aim to demonstrate how the integration of scientific principles into clinical activities can enhance both diagnosis and intervention, establishing a solid connection between clinical practice and scientific theory. This connection proves fundamental in ensuring high-quality care that is centered on the specific needs of the patient and supported by robust evidence.

The art of proceeding methodically

Within everyday life, there are numerous ways in which we can cognitively come to conclusions based on elements from our life experiences. Drawing two stimuli from the artistic field to analyze these processes of meaning attribution, we might envision ourselves in front of two paintings (Fig. 1 A-B). If we wanted to ascertain whether they were created by the same artist, we could focus on a visual and comparative analysis of the works. In the specific case of the paintings illustrated in Fig. 1 A-B, we might observe various similarities in their characteristics: the depicted forms show analogies, the brushwork is similar, the structuring of space is consistent, and the choice of lights and shadows can be considered homogeneous.

Therefore, if we were to limit ourselves to examine only the visible aspects through a comparative method, they might conclude that both works were created by the same author. However, this conclusion would prove incorrect, as the first painting, Fig. 1-A, is a work by Pablo Picasso, while the second, Fig. 1-B, was created by the artist Georges Braque (Fig. 2 A-B).

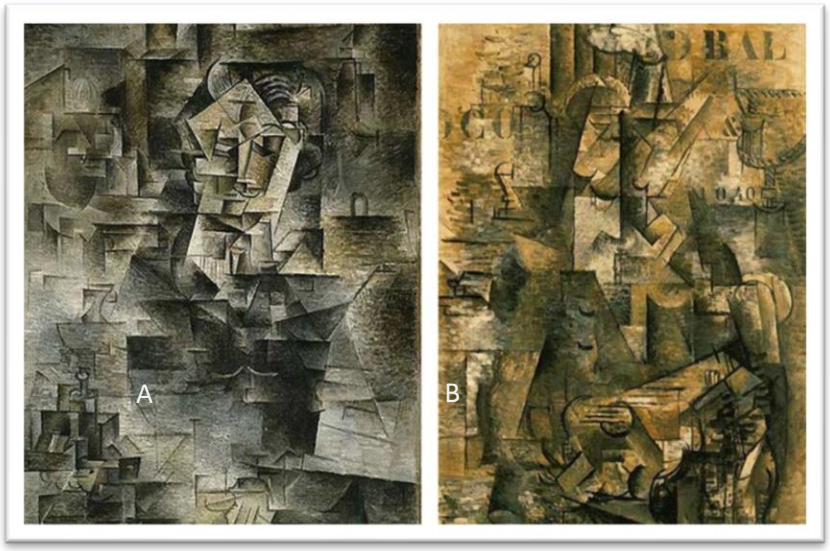

Fig. 1. *Visible aspects through a comparative method.*

Fig. 2. *Visible aspects through a comparative method. **A**): Pablo Picasso; **B**): Georges braque.*

The mental process that led to the conclusion is referred to as the comparative method. The comparative method is an approach used to analyze and compare two or more entities, such as theories, phenomena, institutions, cultures, social practices, or systems, to identify significant similarities and differences. This method allows for the formulation of hypotheses, the development of theories, and the drawing of conclusions about specific aspects through the systematic observation of operational variables in different contexts.

A second method of meaning attribution is Bayes' deductive method (26). This approach, named after Thomas Bayes, an 18th-century British mathematician and theologian, allows for updating the probability of a hypothesis in light of new evidence or information. The formula of Bayes' theorem links the posterior probability of a hypothesis, given certain evidence, to the prior probability of the hypothesis and the likelihood of the evidence under the hypothesis (Fig. 3). In this way, the method allows for the deduction of new probabilities from observed data, combining prior information (prior probability) with fresh information (likelihood) to arrive at an updated assessment of the hypothesis (26, 27).

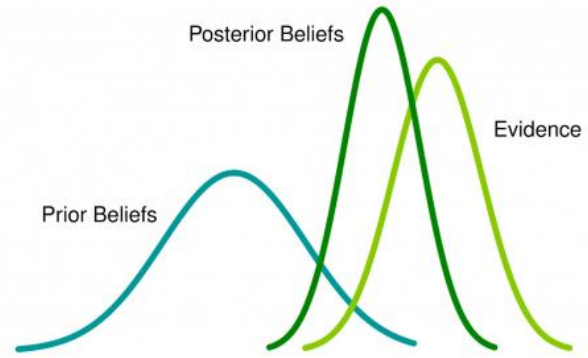

Fig. 3. *Bayes Pyramid.*

Applying Bayes' method to the aforementioned artistic stimuli (Fig. 1 A-B), requires a rigorous and accurate analysis. It is essential for the observer to possess a deep knowledge of art history and the cultural contexts in which these artists emerged, access reliable and selected sources, and keep updated through established and recognized knowledge channels. The search for information should go beyond superficial appearances; a critical approach involves considering the historical context, the techniques used, and the symbolic meaning of the works.

This example underscores the importance of thorough and rigorous analysis. An evaluation based solely on seemingly similar elements can easily lead to incorrect and misleading conclusions.

These considerations are also applicable to the medical field. Similar symptomatic presentations may conceal different diagnoses; for instance, two patients with chest pain and fatigue may be indicative of distinct causes, such as cardiac issues, systemic disorders, or psychological factors.

One of the main risks of the comparative method is the tendency to generalize results. Each patient is unique, and the response to treatment can vary significantly. Effective intervention in one group does not guarantee the same effect in another group with different clinical characteristics, which can lead to inadequate treatments and outcomes of medical malpractice.

Applying the comparative method in medicine can carry the risk of encountering cognitive biases. "Cognitive biases" are systematic errors in thinking that influence people's decisions and judgments. These mechanisms of cognitive distortion result from mental shortcuts (known as "heuristics") that the brain uses to simplify the process of information processing (23). Cognitive biases can lead to incorrect conclusions or distorted perceptions of reality, affecting human behavior in various contexts, including the assessment of probabilities, memory, and the interpretation of events. In medical practice, they can influence clinical decision-making, introducing systematic errors in data evaluation and diagnosis formulation, thereby compromising scientific evidence and the quality of care provided to patients (19). For this discussion, it is useful to analyze two examples of cognitive biases: selection bias and confirmation bias.

The "selection bias" is a type of systematic error that occurs when conclusions or generalizations are influenced by a non-representative sample, leading to distortions in results or observations. This bias can manifest in various contexts, such as scientific research, statistical surveys, or everyday decision-making. This error can compromise the interpretation of results; for example, if a study on emotional well-being includes participants with common demographic or social variables exclusively, the results may not reflect the diversity present in the general population. Consequently, rigorous study design is essential to ensure generalizable and useful conclusions in clinical practice (19, 24).

The "confirmation bias" refers to the tendency to seek out and interpret information in a manner that confirms pre-existing beliefs. This can lead to erroneous diagnoses in cases where, for instance, a physician ignores symptoms that contradict their preconceived diagnosis. This form of bias can have significant consequences, as it may lead to incorrect conclusions and, ultimately, cause harm to patients (19, 20).

Another critical aspect concerns the neglect of contextual factors that can influence clinical outcomes. Variables such as social support, environmental conditions, and cultural differences can have a significant impact on treatment responses. Overlooking these factors can reduce the effectiveness of interventions and compromise patient outcomes (1-10).

In conclusion, although the comparative method can be applied in daily life, as it simplifies the complexity of human experience, professionals must be fully aware of its limitations. Generalization, selection biases, and the disregard for contextual factors can undermine the effectiveness of this approach and negatively affect patient health. Therefore, it is crucial to integrate the comparative method with other strategies, such as the deductive method of Bayes, and to adopt a holistic perspective that considers the uniqueness of each patient and scientific evidence.

Regulations in Italy regarding the appropriateness of treatment

In recent decades, the medical profession has undergone a series of legislative transformations that have defined professional profiles, rights, and duties, as well as ethical and legal responsibilities. These regulations have contributed to a greater appreciation of the physician's role within the Italian healthcare system.

One of the main regulatory references is DL n. 502/1992 (28), which restructured healthcare professions, outlining the profiles of each role, including physicians, and conforming the legal attributions to support the profession. DM n. 240/1994 (29) defined the professional profile of the physician, specifying the responsibilities and competencies required for the correct exercise of the profession. In particular, the decree emphasizes the centrality of the physician in the diagnostic and therapeutic process and promotes a multidisciplinary approach to healthcare assistance.

Of particular relevance is also Legge n. 42/1999 (30), which abolished DPR n. 225/1974 and established greater autonomy in medical practice, introducing three fundamental documents: the professional profile of the physician, the professional code of ethics, and the formative principles that guide medical training.

The Decree of the President of the Republic n. 270/2004 (31) reformed the training and recognition of qualifying titles for the exercise of the medical profession, establishing qualitative standards for the training pathway.

A significant intervention is represented by DL 13 September 2012, n. 158 ("Decreto Balduzzi") (32), converted into Law n. 189/2012, which clarifies matters regarding the professional responsibility of the physician. In particular, Article 3 of the decree states that "If one has adhered to the guidelines, one will be responsible for damages only in cases of willful misconduct or gross negligence," thereby promoting the importance of guidelines in reducing the impact of clinical risks.

"Law 8 March 2017, n. 24" (Gelli-Bianco Law) (33) has introduced significant provisions regarding the safety of care and professional liability of healthcare practitioners, particularly concerning the medical profession:

1. safety of care: the law emphasizes the importance of ensuring patient safety by promoting the adoption of good clinical-assistive practices and guidelines developed by public and private entities and institutions and by scientific societies;
2. professional liability: the Gelli-Bianco Law establishes that healthcare professionals, including physicians, must adhere to the guidelines' recommendations while performing healthcare services. Article 5 states that, in the event of a dispute, a physician who has followed such guidelines may demonstrate that they acted diligently, thereby limiting their liability to cases of intent or gross negligence;
3. introduction of the new article 590-series of the Penal Code: this article regulates negligent liability for death or personal injury in healthcare. It establishes that if a harmful event occurs in the exercise of the healthcare profession, penal liability is excluded if the professional has complied with the guidelines. This provision offers additional protection for physicians, recognizing that guideline adherence constitutes a form of diligence;
4. promotion of scientific societies: the law encourages scientific societies to develop and disseminate standards of care and recommendations, contributing to the professionalization of the medical figure and the implementation of evidence-based practices;
5. continuing education requirement: the law underscores the importance of continuing education for healthcare professionals, encouraging updating skills and knowledge in line with the most recent medical evidence.

In summary, the Gelli-Bianco Law represents a significant step for the medical profession, as it establishes a clear regulatory framework for professional liability, promotes patient safety through the adoption of evidence-based practices, and supports the role of scientific societies in defining standards of care.

Therefore, it is imperative for today's physicians to develop adequate competencies to properly apply the Evidence-Based approach to ensure patient safety and adhere to good clinical-assistive practices. Alignment with such norms will effectively regulate medical practice and contribute to an ever-increasing quality of care.

CASE REPORTS

A): case report of a patient with subscapular pain

The following clinical case involved a 37-year-old patient, an avid runner, who had recently traveled to Cambodia. Two months after his return, the patient presented to us complaining of persistent pain in the left subscapular region, a symptom that began to manifest upon his return home. This case provides an important opportunity to apply Bayes' theorem in formulating the final diagnosis.

Given such symptomatology, we initially performed an MRI of the thoracic spine. The results showed areas of altered signal intensity: hypointense areas on the T1 sequence (Fig. 4) and hyperintense areas on the T2 sequence (Fig. 5).

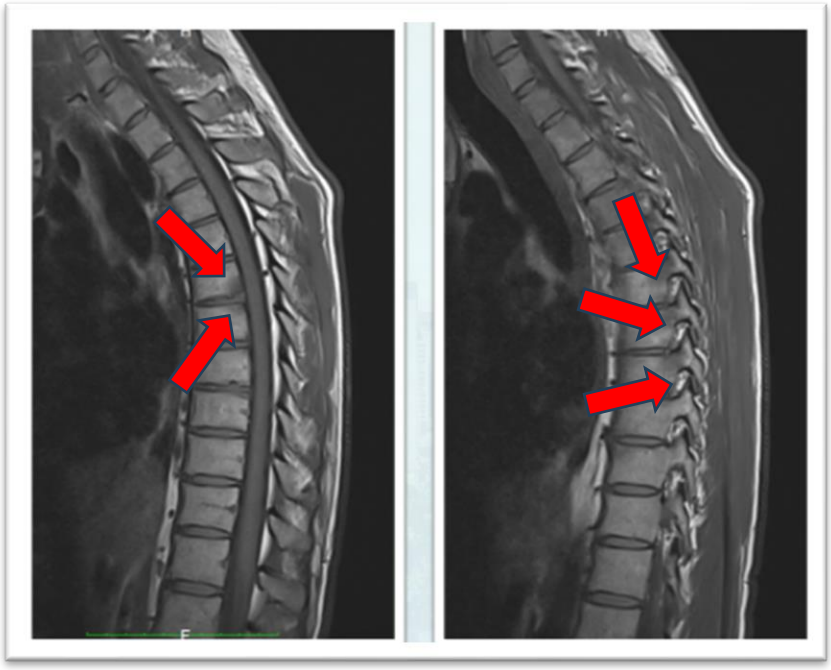

Fig. 4. *Sagittal MRI T1: hypointense signal areas at the level of the opposed posterior edges involving several middle-dorsal vertebrae (**arrows**).*

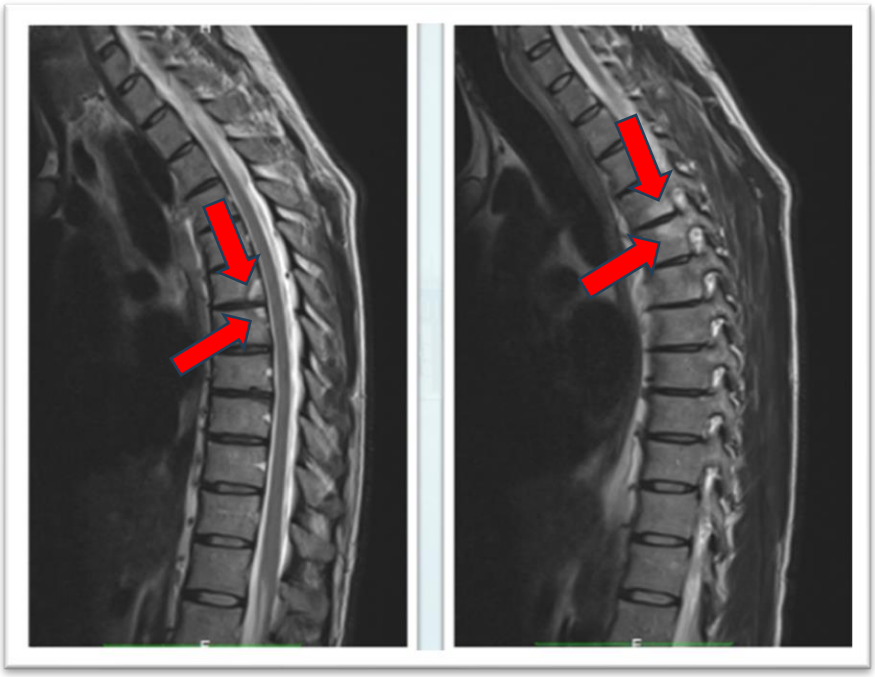

Fig. 5. *Sagittal T2 MRI: areas of high signal intensity at the level of the posterior edges facing some medium-dorsal metameres (**arrows**).*

Particular attention has also been devoted to the sequences using fat saturation techniques, such as Short-Time Inversion Recovery (STIR) (Fig. 6) and Fat Saturation (FAT SAT) (Fig. 7), which confirmed the areas of altered signal intensity.

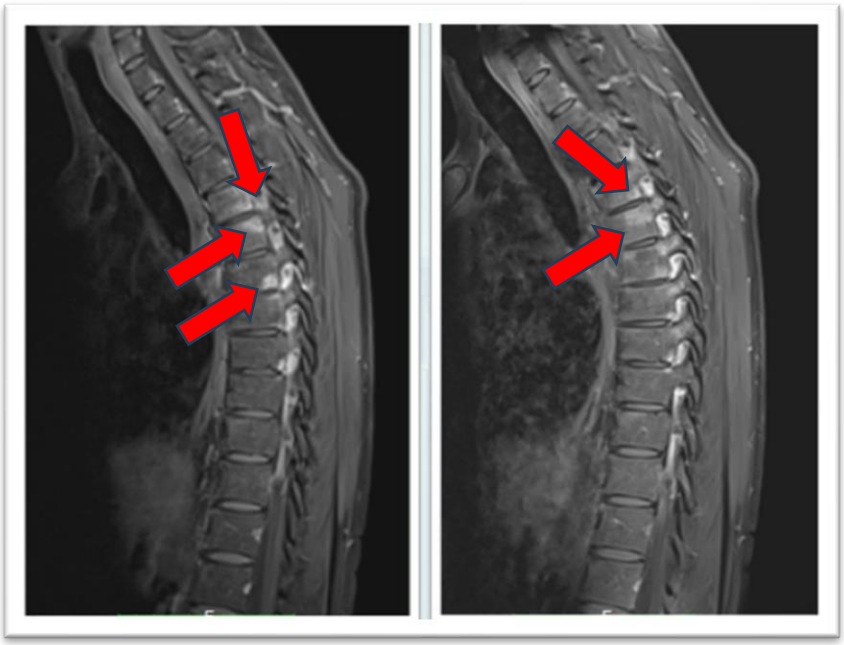

Fig. 6. *Sagittal MRI with STIR sequences: confirmation of areas of altered signal intensity (**arrows**).*

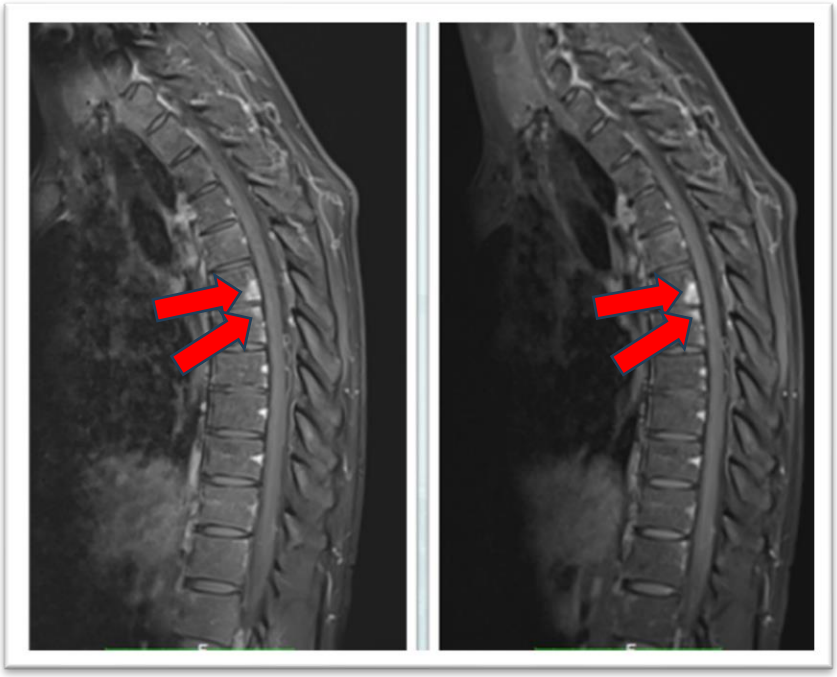

Fig. 7. *Sagittal MRI with contrast-enhances (CE) FAT SAT sequences: confirmation of areas of altered signal intensity (**arrows**).*

Following an MRI investigation that did not provide a conclusive diagnosis, we found ourselves at the initial position of Bayes' diagnostic algorithm, formulating several diagnostic hypotheses. The diagnoses we hypothesized were:

1. tumors (such as lymphomas, myelomas, or metastases);
2. infections;
3. inflammations;
4. malformations.

In light of these alterations in signal intensity, we decided to conduct further investigations with a PET-CT, which turned out to be negative. This allowed us to exclude the tumor-related hypotheses (Fig. 8).

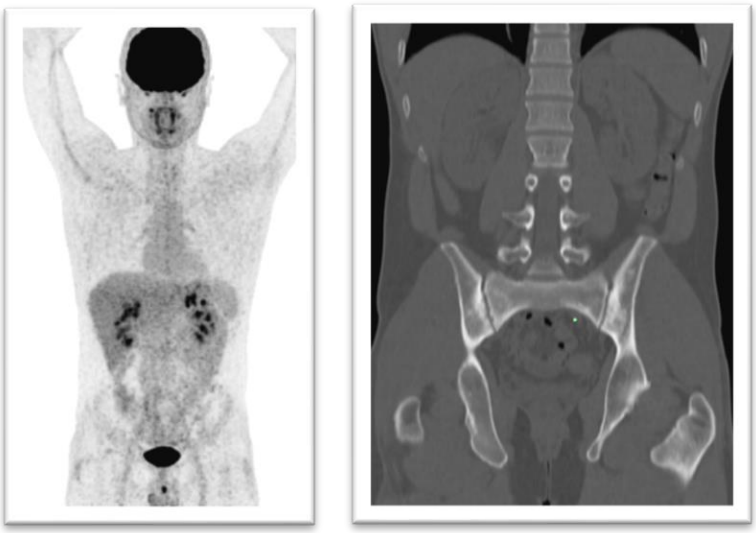

Fig. 8. *PET-CT*

Following the negative outcome of the PET-CT, the remaining hypotheses to consider include:

1. infection;
2. inflammation;
3. malformation.

We have, therefore, reevaluated the MRI and noted a bilateral symmetric alteration in signal intensity in both sacroiliac joints, which allowed us to comfortably exclude the hypothesis of any potential malformative pathology (Fig. 9).

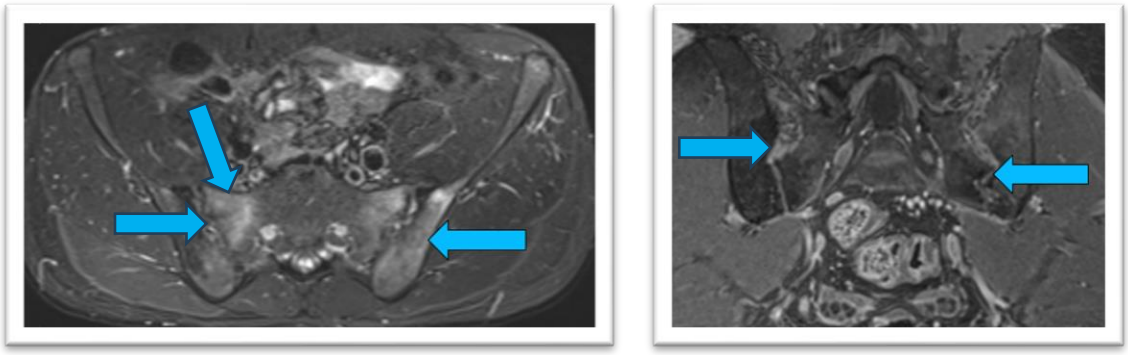

Fig. 9. *MRI signal alteration on both sacroiliac joints (**arrows**).*

The hypotheses remaining to be considered at this point in the diagnostic process include:

1. infection;
2. inflammation.

Continuing with the diagnostic process, blood tests were performed using serological and rheumatic tests. The results showed a negative rheumatoid factor, the Waaler-Rose test was negative, and there was a weak positivity for C-reactive protein. A serological analysis was subsequently conducted to exclude specific infections. Tests for Bartonella, Toxocara canis, Brucella, Schistosoma, fungi, Coxiella, tuberculosis, HIV, and Strongyloides revealed negative results.

With all potential infections excluded, only the hypothesis of inflammation remains. However, it is necessary to define the specific nature of this inflammation. To explore this aspect further, a fundamental diagnostic test must be performed: the HLA-B27 antigen assay. The result of this examination is positive, guiding us towards a diagnostic conclusion.

Through a rigorous application of Bayes' theorem, we have reached the pinnacle of our diagnostic pyramid. The patient was diagnosed with ankylosing spondylitis, an inflammatory condition that justifies the symptoms and the alterations observed in the various tests. This case demonstrates how a systematic and evidence-based approach, such as

that provided by Bayes' theorem, can guide clinical practice through the complexity of the diagnostic process, allowing not only for the confirmation of a specific diagnosis but also for the exclusion of other potential pathological conditions.

B): case report of a patient with left lumboischialgia

The following clinical case involved a 61-year-old man who presented with a left lumbosciatica, characterized by pain radiating along the course of the L5 nerve root. The patient also reported localized pain in the lower lumbar region, accompanied by paresthesia in the lower limbs. For this reason, the patient underwent a lumbar-sacral MRI, which was reported as follows: "Maintained metameric alignment of the posterior wall. Dimensions of the spinal canal are within normal limits. No evident disc herniations are recognizable; the L4-L5 disc slightly protrudes from the bony profiles in the posterolateral region, on the left side. Marginal spondylotic changes with associated Schmorl's nodules at the upper endplate of L5, where adjacent edema of the cancellous bone is also noted. The conus medullaris appears normal in morphology, dimensions, and signal intensity. Additionally, small hemangiomas of the L2 and L3 vertebral bodies are reported incidentally" (Fig. 10 A-B).

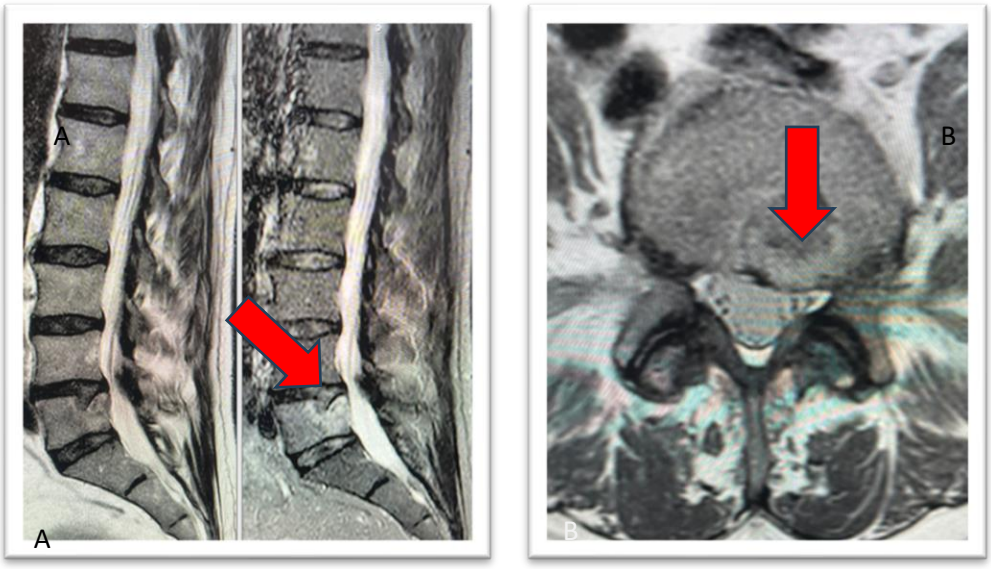

Fig. 10. ***A-B****: sagittal and axial MRI of the lumbosacral spine: an area of altered signal intensity involves the left hemibody of L5 (**arrows**).*

Since there is no diagnostic correlation between the radiological report and the symptoms reported by the patient, it has been decided to further investigate with a computed tomography (CT) scan to better characterize what is described concerning the vertebral body of L5.

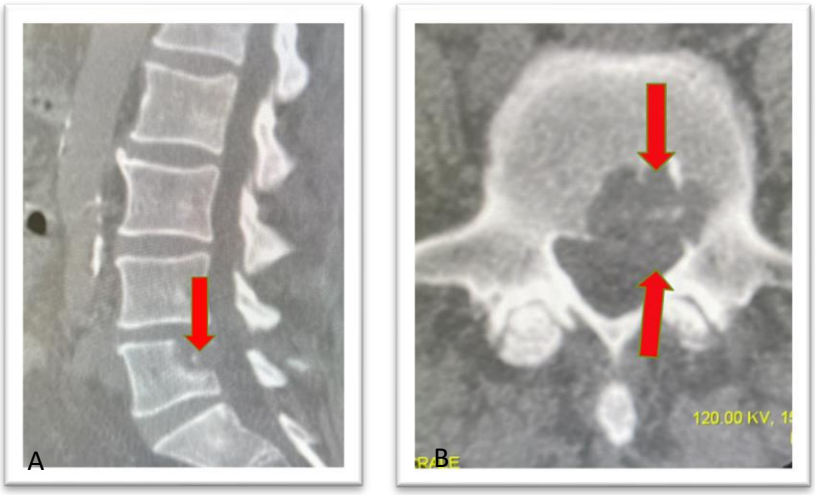

Fig. 11. *CT investigation with algorithms for bone: **A**: sagittal reconstructions; **B**: axial scan: osteolytic area with interruption of the posterior wall affecting the left hemibody of L5 (**arrows**).*

The results of the CT scan revealed that the area previously interpreted on the MRI as edema was, in fact, an osteolytic lesion (Fig. 11 A-B). The CT investigation, further complemented by reconstructions in three planes of space, allowed for the identification of an additional lesion of similar significance affecting the left hip joint, a finding not reported in the MRI examination (Fig. 12 A-B). This new information prompted a reevaluation of the patient's clinical condition, suggesting the need for further investigation with a Staging CT scan to search for a possible primary lesion responsible for the metastatic presentation.

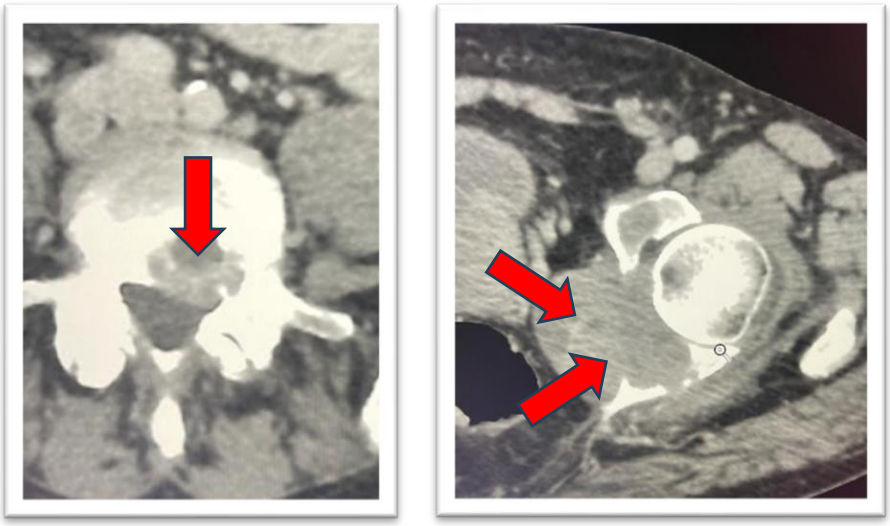

Fig. 12. *Lumbar-sacral-pelvic CT. **A**: osteolytic lesion at L5 (**arrows**); **B**: recurrent lesion at the left hip joint (**arrows**).*

The CT staging has highlighted the lesions affecting L5 and the left hip joint as being of a repetitive nature, originating from a primary neoplastic lesion in the right lung (Fig. 13).

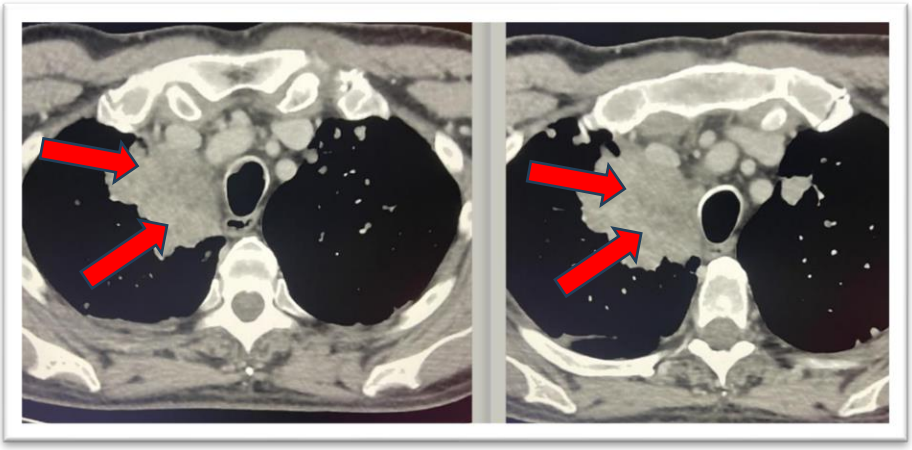

Fig. 13. *CT Staging: a bulky expansive process of the right lung (**arrows**).*

This clinical case raises important considerations regarding the diagnostic process:

1. MRI interpretation: the failure to identify significant alterations, such as osteolytic metastasis, highlights the need for a critical review of radiological interpretation;
2. complementary investigations: the non-compliance with guidelines for the proper execution of MRI investigations (absence of coronal sequences) has limited the ability to identify additional lesions in other locations, such as the left hip joint.

This clinical experience underscores the importance of a systematic approach in the diagnostic process to ensure an accurate and timely diagnosis in patients with complex symptoms.

RESULTS

In both cases presented, the systematic application of Bayes' theorem has demonstrated its effectiveness in reaching the correct diagnosis, thereby allowing for the establishment of the best possible therapeutic options.

In the first case, a 37-year-old patient with left subscapular pain was correctly diagnosed with ankylosing spondylitis through a series of targeted sequential investigations, culminating in the accurate diagnosis confirmed by a positive result for HLA-B27.

In the second case, a 61-year-old man with acute left lumbar sciatica obtained the correct diagnosis only after a re-evaluation of the conducted investigations, completed by a targeted CT study that revealed osteolytic metastatic localizations in the vertebral column and the left hip joint, leading to a comprehensive diagnosis through a staging CT that documented the primary neoplastic lesion affecting the right lung.

This methodological approach has allowed for the management of diagnostic uncertainty and the improvement of clinical outcomes through a critical re-examination of the available data.

DISCUSSION

The two cases presented effectively illustrate the importance of a rigorous methodological approach in clinical practice and the consequences arising from diagnostic errors. In the first case, a 37-year-old patient with subscapular pain received a prompt and accurate diagnosis of ankylosing spondylitis. This positive outcome resulted from a careful application of guidelines and best practices, particularly through the use of Bayes' theorem to process clinical information and achieve a targeted diagnosis.

In contrast, the second case highlighted a series of methodological errors that led to a diagnostic delay for a 61-year-old patient presenting with symptoms of acute left lumbosciatica. Despite initial investigations, lumbar-sacral metastasis was not recognized on MRI. Furthermore, the lack of coronal images during the examination hindered the identification of a second repetitive localization affecting the left hip joint. These errors demonstrate how a failure to adhere to evidence-based medicine EBM guidelines can compromise the quality of diagnoses and, consequently, negatively impact the patient's prognosis.

These cases crucially highlight the role of EBM in clinical practice. This approach promises to integrate the best available evidence, clinical expertise, and patient preferences to promote safe and effective diagnostic and therapeutic decisions. The systematic analysis of diagnoses related to ankylosing spondylitis and systemic neoplasia confirms that EBM can optimize care pathways, minimizing the risk of clinical errors and improving patient outcomes.

The use of Bayes' deductive method has proven essential in this context, as it allows professionals to update their hypotheses based on clinical evidence continuously and address uncertainty by diagnosing more accurately. Avoiding cognitive biases, such as selection and confirmation, is fundamental to ensuring the quality of clinical decisions. Each patient presents unique characteristics, and basing diagnoses on generalizations derived from past experiences can lead to inadequate therapeutic choices. Therefore, emphasizing the continuous training of professionals, both in the use of deductive reasoning and in the principles of EBM, is of primary importance in reducing the risk of malpractice and ensuring high-quality care.

Similarly, it is crucial to recognize the importance of patient-centered communication. Establishing an open and honest dialogue with patients not only fosters the development of a solid trust-based relationship but is also essential for gathering vital information regarding their needs and preferences. The centrality of the patient must always be maintained, as their perceptions and clinical history can provide crucial insights for interpreting signs and symptoms, guiding diagnostic and therapeutic choices toward more effective and personalized solutions. Additionally, strict adherence to current regulations, as highlighted by the Gelli-Bianco Law, further emphasizes the importance of integrating evidence-based practices into routine clinical work. The regulations not only encourage a scientific approach to managing clinical risks but also provide legal protection for professionals who operate in accordance with the established guidelines.

CONCLUSIONS

In conclusion, adopting EBM is imperative for the modern healthcare professional. The application of the deductive Bayes method, coupled with an awareness of cognitive biases and a commitment to a rigorously scientific approach, is essential to ensure the quality of care and reduce the risk of diagnostic errors. Physicians must remain consistently updated to apply these principles correctly.

Moreover, emphasizing patient-centered communication, wherein the patient's needs and experiences are at the core of clinical practice, not only allows for the collection of valuable information but also helps to build a strong and lasting therapeutic relationship. Integrating scientific evidence with the individual peculiarities of each patient within a clear and precise regulatory framework is crucial to ensure the safety and effectiveness of the treatments provided.

In summary, the synergy between scientific methodology, empathetic communication, and current regulations represents the key to delivering high-quality care in the contemporary healthcare, contributing to improved clinical outcomes and safeguarding patient rights.

REFERENCES

1. Becker MH, Maiman LA. Sociobehavioral Determinants of Compliance with Health and Medical Care Recommendations. *Medical Care*. 1975;13(1):10-24. doi:https://doi.org/10.1097/00005650-197501000-00002
2. Kirscht JP, Becker MH, Eveland JP. Psychological and Social Factors as Predictors of Medical Behavior. *Medical Care*. 1976;14(5):422-431. doi:https://doi.org/10.1097/00005650-197605000-00004
3. Cummings KM, Becker MH, Kirscht JP, Levin NW. Psychosocial Factors Affecting Adherence to Medical Regimens in a Group of Hemodialysis Patients. *Medical Care*. 1982;20(6):567-580. doi:https://doi.org/10.1097/00005650-198206000-00003
4. Cameron C. Patient compliance: recognition of factors involved and suggestions for promoting compliance with therapeutic regimens. *Journal of advanced nursing*. 1996;24(2):244-250. doi:https://doi.org/10.1046/j.1365-2648.1996.01993.x
5. Moore PJ, Sickel AE, Malat J, Williams D, Jackson J, Adler NE. Psychosocial factors in medical and psychological treatment avoidance: the role of the doctor-patient relationship. *Journal of Health Psychology*. 2004;9(3):421-433. doi:https://doi.org/10.1177/1359105304042351
6. Umaki TM, Umaki MR, Cobb CM. The Psychology of Patient Compliance: A Focused Review of the Literature. *Journal of Periodontology*. 2012;83(4):395-400. doi:https://doi.org/10.1902/jop.2011.110344
7. DiMatteo MR. Social Support and Patient Adherence to Medical Treatment: A Meta-Analysis. *Health Psychology*. 2004;23(2):207-218. doi:https://doi.org/10.1037/0278-6133.23.2.207
8. DiMatteo MR, Lepper HS, Croghan TW. Depression Is a Risk Factor for Noncompliance With Medical Treatment. *Archives of Internal Medicine*. 2000;160(14):2101. doi:https://doi.org/10.1001/archinte.160.14.2101
9. Li SC. Factors affecting therapeutic compliance: A review from the patient's perspective. *Therapeutics and Clinical Risk Management*. 2008;Volume 4(1):269-286. doi:https://doi.org/10.2147/tcrm.s1458
10. Badon P, Canesi M, Monterosso A, Pellegatta F. *Procedure Infermieristiche*.; 2018:1-7.
11. Guyatt G. Evidence-Based Medicine: a new approach to teaching the practice of medicine. *JAMA*. 1992;268(17):2420-2425. doi:https://doi.org/10.1001/jama.1992.03490170092032
12. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence Based Medicine: What It Is and What It Isn't. *British Medical Journal*. 1996;312(7023):71-72. doi:https://doi.org/10.1136/bmj.312.7023.71
13. Rosenberg K. Minimum nurse-to-patient Ratios Improve Staffing, Patient Outcomes. *Am J Nurs*. 2021;121(9):57. doi:10.1097/01.NAJ.0000790644.96356.96
14. Masic I, Miokovic M, Muhamedagic B. Evidence Based Medicine - New Approaches and Challenges. *Acta Informatica Medica*. 2008;16(4):219. doi:https://doi.org/10.5455/aim.2008.16.219-225
15. Akobeng AK. Principles of Evidence Based Medicine. *Archives of Disease in Childhood*. 2005;90(8):837-840. doi:https://doi.org/10.1136/adc.2005.071761
16. Traina F. Medical Malpractice: The Experience in Italy. *Clinical Orthopaedics and Related Research*. 2008;467(2):434-442. doi:https://doi.org/10.1007/s11999-008-0582-z
17. Brouwers MC, Kho ME, Browman GP, et al. AGREE II: Advancing Guideline development, Reporting and Evaluation in Health Care. *Canadian Medical Association Journal*. 2010;182(18):E839-E842. doi:https://doi.org/10.1503/cmaj.090449
18. Croskerry P. The Importance of Cognitive Errors in Diagnosis and Strategies to Minimize Them. *Academic Medicine*. 2003;78(8):775-780. doi:https://doi.org/10.1097/00001888-200308000-00003
19. Ciceri MR, Franco AG, Feldman RS. *Psicologia Generale*. McGraw-Hill Education; 2013:1-454.
20. Nickerson RS. Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*. 1998;2(2):175-220. doi:https://doi.org/10.1037/1089-2680.2.2.175
21. Croskerry P. A Universal Model of Diagnostic Reasoning. *Academic Medicine*. 2009;84(8):1022-1028.
22. Arvai J. Thinking, fast and slow, Daniel Kahneman, Farrar, Straus & Giroux. *Journal of Risk Research*. 2013;16(10):1322-1324. doi:https://doi.org/10.1080/13669877.2013.766389
23. Tversky A, Kahneman D. Judgment under uncertainty: Heuristics and Biases. *Science*. 1974;185(4157):1124-1131. doi:https://doi.org/10.1126/science.185.4157.1124
24. Tripepi G, Jager KJ, Dekker FW, Zoccali C. Selection bias and information bias in clinical research. *Nephron Clinical Practice*. 2010;115(2):94-99. doi:https://doi.org/10.1159/000312871

25. Trevisan N. La qualità dell'assistenza infermieristica. In: *Procedure Infermieristiche.* Casa ed. Ambrosiana; 2018.
26. Hartigan JA. *Bayes Theory*. Springer New York; 1983. doi:https://doi.org/10.1007/978-1-4613-8242-3
27. Joyce JM, Gabbay DM, Hartmann S, Woods J. The Development of Subjective Bayesianism. In: *Inductive Logic*. Vol 10. NorthHolland; 2011:415-475. doi:https://doi.org/10.1016/B9780444529367.500124
28. *Riforma Delle Professioni Sanitarie*. Gazzetta Ufficiale della Repubblica Italiana, n. 2, 4 gennaio 1993; 1999.
29. *Definizione Del Profilo Professionale Del Medico*. Gazzetta Ufficiale della Repubblica Italiana, n. 75, 31 marzo 1994; 1994.
30. *Riforma Della Disciplina Delle Professioni Sanitarie*. Gazzetta Ufficiale della Repubblica Italiana, n. 101, 2 maggio 1999; 1999.
31. *Riforma Della Formazione E Del Riconoscimento Dei Titoli Abilitativi per l'Esercizio Della Professione Medica 2004*. Gazzetta Ufficiale della Repubblica Italiana, n. 2, 4 gennaio 2005; 2004.
32. *Disposizioni Urgenti in Materia Di Emergenza Sanitaria*. Gazzetta Ufficiale della Repubblica Italiana, n. 265, 13 novembre 2012; 2012.
33. *Disposizioni in Materia Di Sicurezza Delle Cure E Responsabilità Professionale Degli Esercenti Le Professioni Sanitarie.* Gazzetta Ufficiale della Repubblica Italiana, n. 64, 17 marzo 2017; 2017.