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BOOK/WEB REVIEW SECTION

Book Review

Complex Regional Pain Syndrome: What Is the Evidence?

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Quod gratis asseritur, gratis negatur. Hitchens Razor: What can be asserted without evidence can be dismissed without evidence.

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This book was created under a directive from Veritas Medicus, the Foundation of the American Academy of Disability Evaluating Physicians (now the International Academy of Independent Medical Evaluators, iaime.org). The purpose of the book is to show that "the development of the complex regional pain syndrome (CRPS) construct has overall proven to be a failure. As such, the term should be abandoned and effort should turn toward determining what this is as opposed to describing what it is not." (p. 3)

The book reviews both peer-reviewed and non-peer-reviewed published data. Unfortunately, it also appears to minimize, misinterpret, or ignore hundreds of published, peer-reviewed, validated data regarding CRPS. I lost count of the number of times that a statement was preceded by or contained the term "scientific evidence" when only one to three references, not always to peer-reviewed papers, were used. The book appears to substitute unconfirmed anecdotes and a perspective at odds with published CRPS experience in many instances. It does set out the scientific, diagnostic, clinical, and legal dilemmas that have bedeviled the CRPS community for decades. These issues are under constant evaluation and refinement within that community. None of the issues relating to impairment is unique to CRPS, and the medicolegal issues are common to many compensable or personal injury cases.

The book concludes by recommending the use of a new and unvalidated diagnosis, "amplified musculoskeletal pain syndrome."

I believe that a critical reading of this book will confirm the scientific evidence for and validity of CRPS, and the absence of evidence for the proposed alternative.

Overview

"Scientific findings have repeatedly indicated that the vast majority of people who obtain a complex regional pain syndrome diagnosis will be in a compensation context. Consequently, historical reports from such individuals cannot be credibly considered to be reliable or accurate. Therefore, a differential diagnostic process which is only based on information gained from the patient/examinee will not be credible" (three references: Allen et al. 1999; AMA Guides; and Verdugo and Ochoa 2000).

Pain syndromes similar to CRPS have more than 100 synonyms in the historical literature. The authors acknowledge "the prior work that prior AADEP authors gave towards the CRPS paper published in the Journal in 2002" (Aronoff et al. *Pain Med* 2002;3:274–88—a publication predating the "Budapest criteria"). However, the "Budapest" diagnostic criteria for CRPS have since been approved by the International Association for the Study of Pain (IASP) in its taxonomy. Both CRPS and "Budapest" are searchable in PubMed (more than 2,000 citations), Ovid, Google Scholar, and ICD-10. There is also an IASP Special Interest Group for this condition meeting most recently at the World Congress on Pain in September 2016. Despite these factors, the IASP criteria are not apparently widely used in clinical practice and publications. On the other hand, "amplified musculoskeletal pain syndrome" scored only a single hit on PubMed.

The overdiagnosis of CRPS by community physicians has been shown to be significantly reduced if the current IASP criteria are applied. It seems more likely that they are applied by pain clinicians and rehabilitation specialists than by disability/impairment evaluating

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specialists, primary care physicians, or allied health practitioners.

CRPS is a default diagnosis insofar as it requires the absence of any other diagnosable condition that would explain the symptomatology. However, application of the IASP criteria to a particular patient is not particularly clinically challenging, time consuming, or expensive. It does require familiarity with the use of IASP criteria. There does not appear to be convincing published evidence for the "Ensenada" criteria (p. 155).

There are undoubted problems with the IASP criteria, recognized by the IASP. These criteria allow for three levels of clinical "strength": research, clinical, and not otherwise specified. It was assumed that the middle course, "clinical," would be applied in usual pain medicine practice. It is also true that there was no direct input into these criteria from the disability evaluating community. There was, however, input from multiple clinical and scientific disciplines and patient advocacy groups. The independent medical evaluating community might have a differing view because this book states, "The assessment of CRPS is almost never seen outside of a compensation seeking scenario." This assertion is not supported by any peer-reviewed study that I was able to retrieve other than the single one quoted. This compensation situation is certainly not the case in the majority of epidemiologic studies or in general pain clinics, which see pediatric, postoperative, post-traumatic, spontaneous, and geriatric CRPS not involving compensation issues.

Diagnosis and Testing

This book states that the construct "CRPS" is invalid because it is a default diagnosis without a "gold standard." This statement was certainly once true. The CRPS concept is under scientific scrutiny now that the IASP criteria are being validated, published, and updated when compared with other neuropathic and musculoskeletal pain states and chronic limb pains of other causes. Specifically, the presence of any of these other diagnoses excludes the diagnosis of CRPS.

Diagnostic Criteria and Risk Factors

The book has apparently inappropriate emphasis on the diagnosis of dysautonomia. Although there may be symptoms and signs of sympathetic dysfunction in CRPS, there is no published evidence that any of the differential diagnoses in Table 4 of this book are related in any way to the occurrence of CRPS. Similarly, none of the historic factors in Table 3 have been shown to be predictive of the occurrence of CRPS. The diagnosis of PPN/D specifically excludes the diagnosis of CRPS, so the statements regarding risk factors for this are misleading if applied to CRPS. Table 1 is also not relevant as there are no published gastrointestinal, cardiovascular, or genitourinary symptoms reliably associated with CRPS.

Differential Diagnosis

CRPS has never been convincingly shown to have psychiatric or psychologic precursors, so the implication that these are important comorbidities is incorrect. There is minimal published evidence of malingering, and factitious disorders are represented by a few (very rare) case reports. CRPS has been shown to have psychiatric and psychologic consequences, but these do not form any part of the diagnostic criteria. The statements made in this book regarding these issues appear to be anecdotal at best.

Diagnostic Testing

Having explained in the preceding sections of the book that the diagnosis of CRPS is not possible because of the lack of a "gold standard," the authors suggest seven baseline tests. These appear to have an empiric basis without evidence of diagnostic validity, specificity, or sensitivity. None of these tests is necessary to satisfy the IASP diagnostic criteria, which rely on a meticulous history and physical examination. The book does correctly stress this requirement on several occasions. A fundamental concept of CRPS diagnosis is that if the IASP criteria are not satisfied, then CRPS is not present. Further diagnostic testing might become necessary to provide an alternative clinical diagnosis and guide to management.

The spectrum of hypervigilance—symptom amplification—somatic symptom and related disorders (DSM-5)—factitious disorder—malingering (DSM-5 V65.2) seems to have been relegated into an overview that only considers malingering as an explanation for the inexplicably severe signs and symptoms of CRPS. This spectrum should perhaps be explored in the book for balance. There are too few valid reports in the literature for these diagnoses to have been considered in the Budapest criteria.

> A completely negative initial workup is not indicative that the patient defaults to CRPS.... A negative workup (including the meticulous history and physical examination) is proof positive that the patient does not have CRPS.... CRPS remains a diagnosis of exclusion, to be considered only after failure of an extensive differential diagnostic process had failed to reveal a more cogent explainable and scientifically valid cause for the clinical scenario.

This whole section seems to be a misinterpretation of the IASP process. Only after a patient has satisfied the IASP criteria for CRPS should the "extensive differential diagnostic process" be considered to rule out other pathology. This incorrect concept would seem to be a fatal flaw in these authors' whole approach to CRPS. It would, however, be part of the explanation for the overdiagnosis of CRPS in the community, if such is, in fact, the case.

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Treatment

The section on treatment is correct in that outcome measurement has not been standardized in the literature. Unfortunately, outcome measurement has not been standardized for many, if not most, medical conditions. There is consensus in the pain literature, however, that functional outcomes (including medication use) are more important than pain measures.

However, the section does not appear to acknowledge the importance of multidisciplinary management, only individual symptom treatment. References 63–66 mention physical therapy interventions. It also does mention in passing currently popular (and expensive) ancillary treatments such as peripheral and central neuromodulation techniques and cognitive-behavioral therapies. Opioid therapy is correctly regarded with skepticism.

It is curious that the text does not appear to refer to the multinational multidisciplinary article, arguably the current benchmark:

Harden RN, Oaklander AL, Burton AW, et al. Complex regional pain syndrome: Practical diagnostic and treatment guidelines, 4th edition. *Pain Med* 2013;14:180–229.

Summary

It would appear that the misinterpretations of current literature and fatal flaws in logic probably render this publication of minimal value to readers. This might particularly apply to primary care, pain, and disability/impairment evaluating physicians. It would also seem to open the field of CRPS disability/impairment evaluation to exploitation by an adversarial legal system. There is an obvious risk of overdiagnosis in any condition heavily dependent on symptoms (with or without signs) such as headache, fibromyalgia/chronic fatigue, even PTSD, and CRPS. Although IASP criteria for CRPS do not specifically address validity testing, it might be reasonable to mention this in the disability/impairment evaluating context. There seem to be no studies of physician test/retest reliability or diagnostic accuracy in CRPS.

It would seem that the concept of CRPS and the term itself are now well established and clinically and scientifically acceptable. It would not seem necessary to introduce any other term to replace it. There is no doubt that much more research needs to be done. As more insight into CRPS is obtained, the taxonomy itself should be clarified, for example by deleting the types (I and II) and categories (research, clinical, NOS).

It would also seem that if the now-established IASP criteria are universally applied in the disability/impairment evaluating field, as well as in primary care and other specialty groups, and results are published, it will provide the opportunity to further advance the science, epidemiology, and management of CRPS.

However, if new untested, unverified, and relatively unknown taxonomy (amplified musculoskeletal pain syndrome) and empiric diagnostic criteria are adopted specifically for one small medical specialty group, I believe this would set the multidisciplinary clinical and scientific progress in CRPS back at least 20 years.

Reference note: This book contains much of the same information that Dr. Barth has previously published: Barth RJ. Chronic pain: Fundamental scientific considerations, specifically for legal claims. In: Melhorn JM, ed. 16th Annual AAOS Workers' Compensation and Musculoskeletal Injuries: Improving Outcomes with Back-to-Work, Legal and Administrative Strategies. American Academy of Orthopedic Surgeons; 2014:52.

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