A Clinician's Pearls and Myths in Rheumatology

John H. Stone
Editor

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Preface

Once when I was an intern, an attending rheumatologist bemoaned the number of decisions he had to make when caring for a single complex patient. *Which dose of prednisone? When to taper? Which steroid-sparing agent to add, or whether to add one at all? Was an ACE inhibitor a good idea in a patient with a serum creatinine of 3.5 mg/dL? When to employ Pneumocystis prophylaxis, and when to stop it?* These struck me as highly interesting questions, but as an intern more concerned that my beeper might sound again any moment to signal my next "hit," I took only passing note of the remark and evinced little sympathy for the beleaguered attending. At least he was going to get some sleep that night!

Some years later, having differentiated into a rheumatologist myself, I pursued training in clinical investigation, wrote papers, conducted randomized clinical trials, and developed a stable of complex patients of my own. Only then did I recall the attending's remark with empathy and observe just how few of the clinical decisions I made were based upon rigorous evidence. Indeed, even if the budget at the National Institutes of Health were once again to double within a short period of time and then to double again, the highly nuanced nature of rheumatic disease would yield to "Grade A evidence" on only a minority of important clinical decision points. In our discipline, there will always remain ample room for the keen clinical "*Gestalt*."

This inevitably brings chagrin to advocates of comparative effectiveness studies, among whom I count myself a member. The application of clinical evidence (when available) to major treatment decisions is critical to conscientious and effective patient care. But the dozens of smaller decisions that comprise the craft of medicine are still rooted in a clinician's direct experience; in clinical intuition; in nuggets of wisdom handed down from mentors; and in tips imparted to practitioners by patients themselves. Rheumatology training and practice rely, in short, on the understanding and application of clinical Pearls. Further, becoming a good clinician and an effective teacher also involves the ability to recognize and debunk Myths: those specious concepts and harebrained ideas that cling to the body of medical knowledge like gum to a shoe, despite being fundamentally wrong.

Pearls and Myths are a substantial, ancient, and ever-renewed portion of the medical canon. When Hippocrates sat beneath the shade of his plane tree on the island of Kos and formulated aphorisms, he generated Pearls that continue to influence the fabric of medical practice down to the present day. Rheumatology fellows on the wards today will do well to recall Hippocrates' Pearl that "A woman does not take the gout, unless her menses be stopped". And even great clinicians are not immune to the unwitting propagation of Myths from time to time. No less an authority than Sir William Osler advocated the use of arsenic for the treatment of pernicious anemia.

The discipline of rheumatology is more conducive than most to teaching and learning by Pearls and Myths. Rheumatologists pride themselves on the idea that no subspecialty relies so heavily upon the history and physical examination – the laying on of hands – for rendering diagnoses. Astute rheumatologists can leap broadly to speculations on prognosis after an examination of only a patient's fingers and hands. At the same time, rheumatology rivals any subspecialty for its array of diagnostic tests that appear arcane to outsiders: *What are the clinical implications of a high-titer ANA with a speckled pattern? And the oligodot pattern?*

Pearls and Myths in Rheumatology is a compilation of the wisdom of some of the most experienced clinicians and insightful clinician-scientists whose work touches upon rheumatic disease. No fewer than 126 contributors, experts all, have written the Pearls and Myths for this book:

73 rheumatologists for adults
19 pediatric rheumatologists
2 dermatologists
1 dermatologist/rheumatologist
3 otolaryngologists
4 orthopedists
2 internists
3 pathologists
1 dentist
3 neurologists
1 endocrinologist
2 neuroophthalmologists
1 ophthalmologist
1 ocular immunologist
1 pediatric infectious disease specialist
1 nephrologist
4 pulmonologists
1 clinical immunologist
2 clinical geneticists
1 undifferentiated stem cell (medical student), but an expert nonetheless

Of course, nearly all of these contributors wear more than one hat. They are clinical investigators, educators, epidemiologists, basic scientists, or accomplished practitioners of other disciplines in which they engage when not doing clinical work. They hail from 13 countries: Austria, Belgium, Canada, Denmark, Germany, Great Britain, Greece, Italy, Japan, the Netherlands, Spain, Turkey, and the United States. Together, they have written 48 chapters of Rheumatology Pearls and Myths. Their chapters comprise a total of more than 1,400 such packets of knowledge (836 Pearls and 610 Myths, actually). Their points are driven home by 400 illustrative elements, including 300 clinical photographs.

Finally, a word about the book's dedication. *Pearls & Myths in Rheumatology* is dedicated to my father, Dr. John Stone III (1936–2008). My father served as the Director of Admissions at the Emory University School of Medicine for more than 20 years. He was a cardiologist, poet, teacher – and an extraordinary clinician. Much of what I know about taking a history I learned from hearing him recount the details of patients he had cared for. As a child, I was thrilled by opportunities to accompany him to the hospital or on the occasional home visit. From time to time as a young boy, some of my playmates were his pediatric patients from the institution that Atlanta once called the "Crippled Children's Clinic": children with congenital or acquired heart disease. As an undergraduate pursuing pre-medical studies, I occasionally tagged along on Cardiology Consult Rounds, where I strained my ears to discern the pericardial friction rub of a 22-year-old woman with end-stage renal disease caused by lupus. And as a medical student performing a visiting clerkship at Grady Memorial Hospital and examining a man alleged to have syphilitic aortitis, I endeavored unsuccessfully to distinguish the potential Austin Flint murmur of aortic regurgitation from the rumble of mitral stenosis caused by rheumatic heart disease. *(I still wonder if the underlying cause of the patient's aortic regurgitation was not giant cell arteritis….)*

I regret that my father's superb cardiac auscultation skills, acquired by dint of many years of hard practice, were not bestowed upon me by right of primogeniture, but it is only fitting that *Pearls and Myths in Rheumatology* is devoted to him: in memory of my finest role model and in celebration of the many cases we enjoyed discussing together. How I wish that those discussions could continue, and go on and on.

I hope you will enjoy, learn from, and pass along the Pearls you deem worthy, all in the spirit of "See one, do one, teach one." Moreover, I hope you will see fit to debunk loudly any Myths described herein (some of which have been passed off as "fact" for generations). Remember only that clinical medicine, described by Lewis Thomas as "The Youngest Science," is ever changing. This will bring, in short order, not only a whole new generation of Pearls and Myths, but also the realization that some of today's Pearls are to become tomorrow's Myths. The converse is also true. These are the principal purposes, perhaps, of second editions.

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References:

Hippocrates. The genuine works of Hippocrates, volumes 1 and 2. Translated and edited by Adams F. New York: Wood; 1886.
Osler W, McCrae T. The Principles and Practice of Medicine. 8th Edition. D. Appleton and Company; 1912.
Thomas L. The Youngest Science: Notes of a medicine-watcher. Viking; 1983.

Contents

1 **Rheumatoid Arthritis** 1
James R. O'Dell, Josef S. Smolen, Daniel Aletaha, Dwight R. Robinson, and E. William St. Clair

2 **Rheumatoid Vasculitis** 15
John H. Stone and Eric L. Matteson

3 **Adult-Onset Still's Disease** 23
Michael H. Weisman

4 **Juvenile Idiopathic Arthritis** 27
Patience H. White, Patricia Woo, and Carol B. Lindsley

5 **Monogenic Autoinflammatory Syndromes** 33
Marco Gattorno, Alberto Martini, Raphaela Goldbach-Mansky, Pamela Aubert, and Polly J. Ferguson

6 **Juvenile Spondyloarthropathy** 51
David A. Cabral and Shirley M.L. Tse

7 **Ankylosing Spondylitis** 57
Jürgen Braun and David Tak Yan Yu

8 **Psoriatic Arthritis** 67
Christopher Ritchlin, Elinor Mody, Philip Mease, and Dafna D. Gladman

9 **Reactive Arthritis** 73
Robert D. Inman and Andrew Keat

10 **Systemic Sclerosis (Scleroderma) and Raynaud's Phenomenon** 77
Janet E. Pope, Philip J. Clements, Daniel E. Furst, Laura Hummers, Dinesh Khanna, Maureen D. Mayes, Thomas Medsger, James Seibold, and Virginia Steen

11 **Nephrogenic Systemic Fibrosis and Other Scleroderma Mimickers** 97
Mark A. Perazella, Janet E. Pope, and Shawn E. Cowper

12 **Sjögren's Syndrome** 107
Manuel Ramos-Casals, Troy E. Daniels, Robert I. Fox, John P. Whitcher, George E. Fragoulis, Fotini N. Skopouli, and Haralampos M. Moutsopoulos

13 **Systemic Lupus Erythematosus** 131
Michelle Petri, Rachel Abuav, Dimitrios Boumpas, Fiona Goldblatt, David Isenberg, Grant J. Anhalt, Victoria P. Werth, and R. John Looney

14 **Pediatric Systemic Lupus Erythematosus** 161
Earl D. Silverman

15 Mixed Connective Tissue Disease . . . 169
Robert W. Hoffman

16 The Antiphospholipid Syndrome . . . 173
David P. D'Cruz and Munther Khamashta

17 Pregnancy in the Rheumatic Diseases . . . 181
Megan E.B. Clowse and Rosalind Ramsey-Goldman

18 Inflammatory Myopathies . . . 191
Ira N. Targoff, Chester V. Oddis, Paul H. Plotz,
Frederick W. Miller, and Mark Gourley

19 Juvenile Dermatomyositis . . . 201
Ann M. Reed, Clarissa A. Pilkington, Brian M. Feldman,
Lauren M. Pachman, and Lisa G. Rider

20 Vasculitic Neuropathy . . . 211
David A. Chad and Peter Siao

21 Pediatric Vasculitis . . . 219
Anne H. Rowley, Seza Ozen, Robert P. Sundel, and Frank T. Saulsbury

22 Behçet's Syndrome . . . 231
Hasan Yazici and Yusuf Yazici

23 The Churg–Strauss Syndrome . . . 239
Andrew Churg, Ulrich Specks, and John H. Stone

24 ANCA-Associated Vasculitis . . . 245
John H. Stone, Shoichi Ozaki, Karina Keogh, Ulrich Specks,
Carol A. Langford, Niels Rasmussen, Cees G.M. Kallenberg,
and Ingeborg M. Bajema

25 Cryoglobulinemia . . . 269
Dimitrios Vassilopoulos

26 Polyarteritis Nodosa . . . 275
John H. Stone

27 Giant Cell Arteritis and Polymyalgia Rheumatica . . . 285
James R. Stone, Misha Pless, Carlo Salvarani, Nicolo Pipitone,
Simmons Lessell, and John H. Stone

28 Takayasu's Arteritis . . . 305
Eamonn S. Molloy, John H. Stone, Carol A. Langford

29 Primary Angiitis of the Central Nervous System and Reversible Cerebral Vasoconstriction Syndromes . . . 311
Leonard H. Calabrese and Aneesh B. Singhal

30 Thromboangiitis Obliterans (Buerger's Disease) . . . 317
Eric L. Matteson and John H. Stone

31 Less Common Forms of Vasculitis . . . 325
Eric L. Matteson and John H. Stone

32 Relapsing Polychondritis . . . 335
Harvinder S. Luthra

33 Fibromyalgia . . . 341
Daniel Clauw and Don L. Goldenberg

34 The Clinical Features of Gout 351
Bruce N. Cronstein and Michael H. Pillinger

35 Gout Epidemiology 355
Hyon K. Choi

36 Gout Treatment 361
N. Lawrence Edwards, Terence Gibson, and Robert A. Terkeltaub

37 Calcium Pyrophosphate Dihydrate (CPPD) Crystal Deposition Disease 369
Ann K. Rosenthal and Robert A. Terkeltaub

38 Inflammatory Eye Disease 377
James T. Rosenbaum and George N. Papaliodis

39 Immune-Mediated Inner Ear Disease 385
Yuri Agrawal and Howard W. Francis

40 Osteoporosis 393
Kenneth G. Saag, Sarah L. Morgan, and Amy H. Warriner

41 Paget's Disease of Bone 405
Margaret Seton

42 Sarcoidosis 409
Robert P. Baughman and Elyse E. Lower

43 Osteoarthritis 421
Nancy E. Lane and Roy D. Altman

44 Regional Musculoskeletal Complaints 433
Joseph J. Biundo, W. Neal Roberts, and Atul Deodhar

45 Low Back and Neck Pain 447
Rajiv K. Dixit and Joseph H. Schwab

46 Amyloidosis 461
George H. Sack Jr

47 The Ehlers–Danlos Syndrome 467
Fransiska Malfait and Anne De Paepe

48 Osteonecrosis 477
Michael G. Zywiel, Mike S. McGrath, and Michael A. Mont

Index 485

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