

dear residents

Seronegative Rheumatology

July 28, 2024

Dear Residents,

July is nearly over - can you believe it! I trust everyone is hitting their stride. **I was recently at a conference** about [Diagnosis in the Era of Digital Health and Artificial Intelligence: A Workshop](#). I was moderating a session on clinical diagnostic reasoning and introduced myself and the session as follows: *my father was an orthopedic surgeon - he dealt with broken bones - easily diagnosed (either visually or by a simple x-ray). I am a rheumatologist - I deal with a broken immune system - not that easily diagnosed!* (But even broken bones can be missed, especially rib fractures).

Testing has often come to our rescue (and sometimes peril – courtesy of those pesky false positives!) In rheumatology we have plenty of tests which generally help us define, classify, diagnose and treat conditions with increased confidence and precision. **This is the realm of seropositive rheumatology** - lupus, scleroderma, Sjogren's syndrome, rheumatoid arthritis, ANCA-associated vasculitis, antibody specific subsets of polymyositis/dermatomyositis, and antiphospholipid antibody syndrome. An even larger set of conditions are seronegative – psoriatic arthritis, ankylosing spondylitis, reactive arthritis, enteropathic arthritis, large vessel vasculitis, Bechet's disease, sarcoidosis, Still's disease, seronegative rheumatoid arthritis, and gout to name a few. These can be trickier to diagnose with confidence. At the same conference I met a neurologist who quipped that neurology can be similarly divided into **MRI-positive neurology** and [MRI-negative neurology](#)! He was lamenting the deskilling brought about by advanced imaging.

Seronegative rheumatic conditions can be more challenging to diagnose. I was recently on the rheumatology consult service. We were consulted to assist with the evaluation and management of a middle-aged man, with alcohol use disorder, who presented with acute oligoarthritis. The right knee, right wrist and left ankle were swollen, tender and red. There was even some periarticular erythema and swelling. The ED had already attempted to aspirate the right knee. It yielded just a few milliliters of bloody aspirate, the analysis of which was limited. No MSU crystals said the report, but I was pretty confident that this scenario was [acute gout](#) with pseudocellulitis. The ED had already started antibiotics. We elected to start colchicine and wait for cultures. The serum uric acid was low, around 3.7. I recall reassuring the team that [serum uric acid can be paradoxically low in acute gout](#). There are many reasons for this – there is a uric acid feeding frenzy by phagocytes and there is increased renal clearance of urate driven by inflammatory cytokines. Undeterred, we continued colchicine. The next day the wrist and ankle were better, but the knee was persistently swollen and painful. We waited until cultures were negative for 48 hours and injected the knee with steroids to hasten recovery. There was some improvement but not as fast as usually occurs with gout.

At this juncture, my confidence that this was gout was feeling shaky – but I still wanted this to be gout. So, we obtained a [dual energy CT scan](#) – but there were no telltale monosodium urate deposits seen. The gout diagnosis was fading fast, and we needed to regroup. Let's ask orthopedics for help, we said – a knee washout might help. They duly came and aspirated the right knee without any luck, but they did manage to get fluid from the left ankle.

They held off on the washout. A few days passed and we continued to scratch our heads and then we saw the following “light growth of *Neisseria gonorrhoeae* from the left ankle.” We were rescued by this result but fooled by a prior one (the earlier urine NAAT was negative for GC/CT).

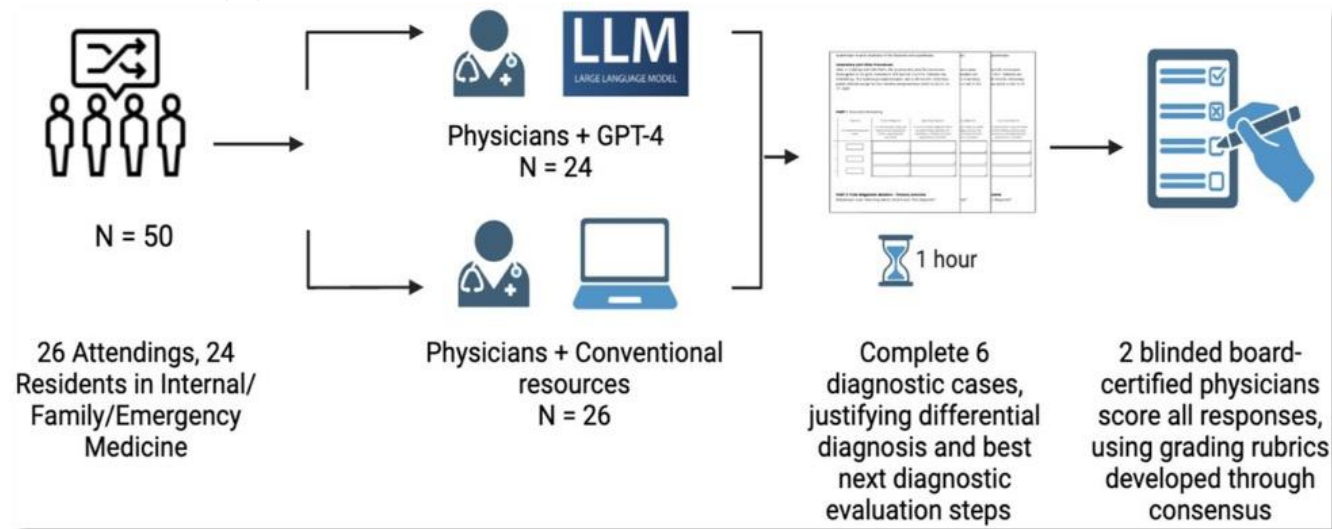
Getting it wrong is very instructive. I retraced my cognitive errors:

1. Availability heuristic – we see a lot of gout in the hospital
2. Framing bias – alcohol use disorder is associated with gout
3. Anchoring/escalating commitment – I wanted this to be gout – I had explained away the low uric acid and had invoked gout associated pseudocellulitis (when in reality this was likely GC tenosynovitis)
4. Omission bias – we didn’t explore the patient’s sexual history

Clinical reasoning is the most rewarding part of being a physician. And we are supposed to be good at it. Not so fast, it seems. At this same conference, it was sobering to learn that the GPT4 Large Language Model outperforms physicians and that even the combination of physicians assisted by GPT4 is actually a bit worse than GPT4 alone

which yielded the best results all by itself 🤖

You can read the paper [here](#).



I wonder if the supervising attending of the future will be an app – an “appending” rather than an attending!

My future looks bleak, it might be att-*ending* 😬

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