HHS Public Access

Author manuscript

JAMA Intern Med. Author manuscript; available in PMC 2020 June 04.

Published in final edited form as:

JAMA Intern Med. 2018 May 01; 178(5): 598–599. doi:10.1001/jamainternmed.2018.0099.

Toenails as the "Hemoglobin A1c" of functional independence: Beyond the polished wingtips

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It was a warm autumn morning when the man stepped through the doors to the clinic, alone. His brown wingtip Oxford shoes gleamed from a quick polish at the shoe-shiner en route to his appointment. He had woken early to prepare for the occasion, beginning with a clean-shave. The pressed collar of his white shirt peaked out from under his favorite blazer. A passerby would be forgiven for thinking that he was on his way to work, and not the doctor's office.

It was his first appointment since the death of his high school sweetheart, a few months earlier. His doctor greeted him with a smile and asked about his drive. As she accompanied him down the hall to the exam room she made a mental note that his usual brisk walk had slowed since she had last seen him. She glanced at his intake vitals - his weight was unchanged, blood pressure within range. Yes, he reported, he had kept up his routine of physical activity, frequenting the gym three mornings a week.

His physician reviewed his glucometer log, and then, at her request, he slowly bent to untie his shoelaces, doffed his argyle socks. And then, he paused, as they both noticed his toenails which had grown so long that they now curled beyond the edge of his toes. Yes, he admitted, he was having more trouble reaching down to trim his nails; his wife had done that for him and now she was gone.

For many people struggling to reach long toenails, the solution is self-evident if lacking a family member or friend to ask for help: schedule a visit to the podiatrist or perhaps a pedicure. Why had this patient let his toenails grow so long while his shoes remained well polished?

The nails have long been recognized as a source of important medical information, from clubbing in patients with pulmonary disease, to splinter hemorrhages in endocarditis, to

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koilonychia in iron deficiency[1]. Clinicians caring for older adults have long used foot care in general as a window into the patient's functional status[2] and ability to stay independent,[3] adhering to Osler's adage to 'always look at the feet.'[4]

Toenails, however, may be a unique window into an individual's functional status, and we postulate that toenail length can provide critical clinical insight when caring for older adults. Toenails grow at a rate of about 2 mm/month[5]: toenail length could be considered a proxy for functional status over the last few months in an older adult, much as Hemoglobin A1c is used as an estimate of blood sugar levels over the last few months in patients with diabetes. When toenails to grow so long that they curl beyond the top of the toe, months have elapsed in which the patient or caregiver was unable or unaware of the need to trim them.

We argue that the physical exam finding of long toenails should alert the clinician to consider the underlying differential diagnosis of the un-trimmed toenails to reveal potentially unmet care needs. For instance, the long toenails of a patient with multiple medical conditions, whose caregiver is developing burnout and struggling to attend to the details of care, may reflect a need for more caregiver support or help in the home. For the patient with difficulty reaching his or her toenails, the clinician may prioritize conditions affecting flexibility and muscle strength, such as arthritis or sarcopenia, and involve colleagues in physical and occupational therapy to maximize functional independence. A patient with cognitive impairment whose toenails have not been attended to in months, may be showing a warning-sign that she is losing the executive function needed to manage her own medications, for example, and may need a multidisciplinary team to help her stay independent. And a patient who struggles to reach his toenails and reluctant to ask for help, may be having difficulty to adjusting to life without his partner.

Indeed, for this patient, the months following the death of his wife had been a challenge. He had not wanted to ask for help from his daughter, whose hands were full with work and children of her own, to trim his toenails or with anything else, perhaps out of embarrassment or fear of losing his independence. The toenail finding opened a conversation about the need to identify other family members or friends on whom he could rely if needed. That autumn visit began the process of his daughter becoming more involved in his care, arranging podiatry visits, and helping him remain independent in his home.

Examining the feet, and asking the question 'how do you get your toenails cut?' may open the door to important conversations between the patient and clinician; the reasons for the untrimmed nails can help tailor treatment plans to the patient's needs. Long toenails could prompt the physician to address limited flexibility or slowed gait with a tailored exercise plan. This finding could prompt screening for depression or cognitive impairment, which could make it more difficult to navigate the health care system to arrange for a podiatry visit, for example. Involvement of a multidisciplinary team could help the patient get the support needed to stay functionally independent, and of course, keep his toenails trimmed.

Long toenails may be to function and frailty in older patients what Hemoglobin A1c is to diabetes: a marker of how things have been going for the last few months, and how concerned the clinician ought to be. In this patient's case, noticing the long toenails enabled

him to get the care he needed to stay independent and keep wearing his polished wingtips, with toenail care to match.

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