Dermatologists Must Take an Active Role in the Diagnosis of Cellulitis

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Misdiagnosis of cellulitis presents dermatologists with both a responsibility to intervene medically as well as an opportunity to correct misperceptions about the scope of our dermatological clinical practice. Cellulitis is a common cutaneous disease in the United States, with an estimated prevalence of 14.5 million cases per year. Concern for cellulitis leads to about 2.8 million emergency department (ED) visits per year. But as Weng and colleagues demonstrate in this issue of JAMA Dermatology, cellulitis is widely misdiagnosed at a significant and unnecessary cost to our patients and health care system. Heath care costs in the United States are high and rising, and cellulitis misdiagnosis contributes to this larger problem. Weng and colleagues show that anywhere between $250 and $515 million are misspent in this way. In EDs and the inpatient setting, the treatment of cellulitis mimickers as true cellulitis leads to delayed diagnoses, complications, increased costs, and morbidity. We applaud the authors’ efforts to quantify this common, expensive, and harmful practice gap, as well as senior author Dr Kroshinsky’s continued efforts in this arena.

Despite our specific expertise in diagnosing cellulitis and distinguishing it from similar-appearing dermatoses, dermatologists are notably underconsulted regarding concerns for cellulitis. Dermatologists can play an important role in decreasing the burden of misdiagnosis of cellulitis in the ED and inpatient setting. Weng and colleagues demonstrated that the misdiagnosis rate in patients admitted through the ED is about 30%, a rate that is similar to that found in other studies. From that, they managed to extrapolate the annual costs to the US health care system, financial and otherwise. Arakaki and colleagues demonstrated that dermatology consultation in the primary care setting improves diagnostic accuracy of suspected cellulitis and decreases the rate of inappropriate antibiotic use. Taken together, these studies suggest that dermatology consultation for suspected cellulitis can improve the quality of care delivered, leading to lower health care costs, fewer delays in diagnosis and appropriate treatment, and decreased adverse reactions and public health concerns associated with inappropriate antibiotic use.

Dermatologists need to consult on these cases because cellulitis of the lower extremity has many mimics that can make diagnosis challenging, particularly for nondermatologists. As experts in cutaneous disease, we have a unique ability to exclude the other dermatoses that lead to a hot, red, swollen, tender leg, such as inflammatory venous stasis, deep vein thrombosis, and allergic or irritant contact dermatitis. In fact, it has been well-argued by Arakaki and colleagues that dermatologist opinion is the gold standard for diagnosis of cellulitis as biopsy specimens and laboratory tests cannot definitively make
the diagnosis. Additionally, when the diagnosis is truly cellulitis, dermatologists can facilitate optimal outpatient management, as is appropriate about 96% of the time,6 and treat any underlying primary cutaneous diseases serving as risk factors for recurrent cellulitis, such as venous stasis and tinea pedis and onychomycosis.6,8 There is no other specialty as well positioned to intervene and rectify this situation. As dermatologists, we should make ourselves available to consult on all cases in which the evaluating physician is considering hospital admission and antibiotic therapy for cellulitis.

As Weng and colleagues6 have demonstrated in their study, the stakes are high for our patients and for the health care system. Patient-centered concerns include the delay in or lack of appropriate treatment for the true disease (which itself often serves as missed opportunity to cure what is often a risk factor for cellulitis) and adverse events associated with inappropriate antibiotics. The primary public health concern is the inappropriate use of antibiotics leading to increased antibiotic resistance. In the study by Weng et al, 100% of misdiagnoses cellulitis received at least 1 intravenous antibiotic, and 60% received 2 or more. The burden on the health care system cannot be overstated: health care overuse stemming from inappropriate hospital admission, longer than necessary hospital stays, and needless hospital readmission.

The stakes are high for dermatologists, too. It may come as no surprise that dermatologists are regarded by other physicians as most helpful in the diagnosis and management of skin disease, particularly skin cancer.9 However, physician leaders of numerous medical physician organizations noted the inappropriate use of antibiotics leading to increased antibiotic resistance. In the study by Weng et al, 100% of misdiagnoses cellulitis received at least 1 intravenous antibiotic, and 60% received 2 or more. When other physicians think of dermatologists, they do not often think of dermatologists. Likewise, the lay public perception of dermatologists is often one of a cosmetician, as 27% of survey respondents believe dermatologists spend the majority of their time performing cosmetic procedures, when in reality survey data show that we spend the majority of our time managing medical dermatology conditions.10,11 This is important because the public’s perception of the value of dermatology is informed by perceptions of dermatology’s scope of practice and may influence policy decisions regarding resource allocation for clinical care and research.10

Misdiagnosis of cellulitis represents a dual opportunity for dermatologists. With cellulitis, dermatologists have the opportunity to aide in the diagnosis of this medically significant acute infection, and while doing so, we can highlight our diagnostic and management skills as an example to correct widespread misperceptions about the scope of dermatologists’ clinical practice. The American Academy of Dermatology, through efforts of the Specialty Positioning Work Group and the exciting development of DataDerm and other tools aimed at demonstrating the value and utility of our field, is endeavoring to show how dermatologists can affect population-based health care. With the advent of accountable care organizations and alternative payment models, it will become even more important for dermatologists to integrate into their local health care systems in the near future. Some may argue that the prospect of consulting dermatology for all suspected cellulitis cases is too large a task. The development of diagnostic algorithms (for instance, if there is bilateral erythema, no fever, and a normal white blood cell count, the diagnosis is unlikely to be cellulitis) and teledermatology may offer ways to mitigate that challenge.12 There is enough evidence to suggest the effort is worth it for the greater good of the US health care system, our patients, and our profession.

There is a significant opportunity for mutual gain and meaningful change. We must do the work of developing validated diagnostic tools and performing prospective research projects that demonstrate the reduction in health care costs, improved quality measures, and better patient outcomes through timely dermatology consultations.