SHORT COMMUNICATION

Need for Improved Definition of "Chronic Wounds" in Clinical Studies

Bhone Myint KYAW[1], Krister JÄRBRINK[1], Laura MARTINENGO[1], Josip CAR[1,2], Keith HARDING[3] and Artur SCHMIDTCHEN[4,5]
*[1]Centre for Population Health Sciences (CePHaS), Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, Singapore, [2]Global eHealth Unit, Department of Primary Care and Public Health, School of Public Health, Imperial College London, London, [3]Division of Population Medicine, Cardiff University School of Medicine, Health Park, Cardiff, UK, [4]Dermatology and Skin Biology Programme, Lee Kong Chian School of Medicine, Nanyang Technological University, 59 Nanyang Drive, Experimental Medicine Building, Singapore 636921, Singapore, and [5]Division of Dermatology, Department of Clinical Sciences, Lund University, Lund, Sweden. *E-mail: artur.schmidtchen@ntu.edu.sg*
Accepted Sep 7, 2017; Epub ahead of print Sep 7, 2017

The term "chronic wound" was first used in the literature in the 1950s, to refer to wounds that were difficult to heal or did not follow a normal healing process (1, 2). However, the term has met criticism for its uncertainty regarding the duration of chronicity (3). Various alternative terminologies have been suggested, such as hard-to-heal wounds, difficult to heal wounds, non-healing wounds and complex wounds (4, 5). "Chronic wounds" are commonly defined as "wounds that have not proceeded through an orderly and timely reparation to produce anatomic and functional integrity after 3 months" (6). However, Martin & Nunan (7) defined a "chronic wound" as a barrier defect that has not healed in 3 months, and Leaper & Durani (8) defined it as a wound that lacks a 20–40% reduction in size after 2–4 weeks of optimal treatment or when there is not complete healing after 6 weeks. Recent reviews have also highlighted the lack of consensus regarding the definition of a "chronic wound" and the need for further research in this area (9, 10).

The increasing prevalence of non-communicable diseases and the ageing population have put the spotlight on wound care and the considerable societal burden of wounds (11, 12). However, the lack of a common terminology when sharing and applying scientific research implies a risk of inaccuracy, with serious consequences for patients with wounds. For instance, the great disparity in the definitions of "chronic wounds", leading to only a few studies being included in 2 systematic reviews (3, 9), may, at a later stage, have a negative impact on the management and care of "chronic wounds". Moreover, the undefined terminology may also hamper future comparisons between separate clinical retrospective or prospective studies.

The aim of this study is to highlight the wide heterogeneity in the definitions and reference staging of "chronic wounds", and along with the review by Gould et al. (9), discuss this problem according to category of wound.

METHODS

Based on the published search strategy applied in a systematic review on the prevalence of chronic wounds (13), we reviewed the full-text of the included titles (in the title/abstract stage) for the definition of chronic wounds used by the different authors. We classified the studies, by aetiology, into the following groups: pressure ulcers (PU), venous ulcers (VU), arterial insufficiency ulcers (AIU) and diabetic foot ulcers (DFU), implying also that studies on ulcers of mixed aetiologies were excluded, as the purpose was to describe chronicity by ulcer group.

RESULTS

A total of 669 articles on chronic wounds that met the review criteria (13) were identified (Fig. S1[1]), of which 400 articles corresponded to PUs (60%), 238 to DFUs (36%), and 28 to VUs (4%) (despite this being one of the most common causes of chronic wounds), and 3 to AIUs.

Sixty-three percent of the articles describing PUs did not provide a definition or a staging system. One hundred and forty-seven articles (37%) provided either a reference staging system or a definition. Details are shown in **Fig. 1**. No studies mentioned the duration of chronic PU in their definitions.

Only 53 of 238 articles on DFUs provided a definition or a staging system, of which 33 (22%) used the Wagner classification of diabetic ulcer (1979–1981) without providing any information on the duration (Fig. 1). Only 6 articles provided duration in their definition of a chronic DFU, with a cut-off range for defining chronicity varying from 2 to 8 weeks.

Of the 28 papers on VUs, 10 (36%) used a staging system or provided a definition. The most commonly cited classification system was Comprehensive Classification System for Chronic Venous Disorders (CEAP), which was cited in 4 papers without any specified duration of the ulcer. Another 3 articles defined VU based exclusively on clinical and pathophysiological findings. Only 3 articles defined VU using the duration of the ulcer as part of their definitions, applying a range from 6 weeks to 2 months. Two of the 3 articles on AIUs cited the Rutherford grading system for the definition without integrating the duration in their definitions.

DISCUSSION

This study examined the preliminary stages of including articles in a systematic review on prevalence of "chronic wounds" of different aetiologies (13) in order to assess the uniformity, or lack of it, in defining the duration of "chronic wounds" as a factor of importance to healing

[1]https://www.medicaljournals.se/acta/content/abstract/10.2340/00015555-2786

This is an open access article under the CC BY-NC license. www.medicaljournals.se/acta
Journal Compilation © 2017 Acta Dermato-Venereologica.

ActaDV Acta Dermato-Venereologica ActaDV Advances in dermatology and venereology

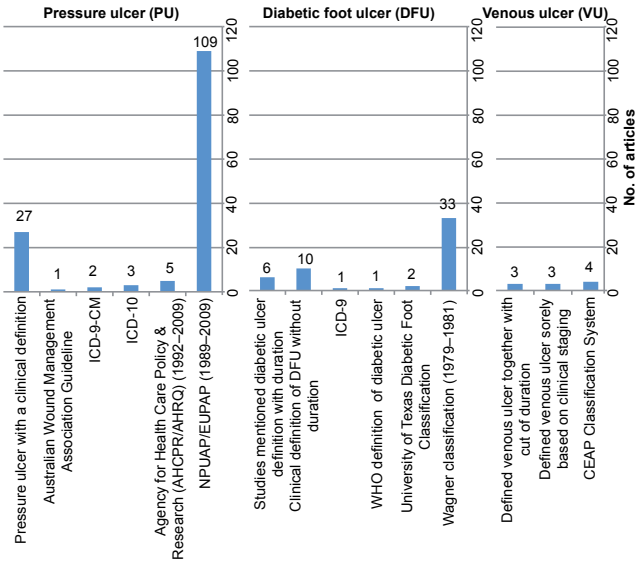


Fig. 1. Number of articles on pressure ulcers, diabetic foot ulcers and venous ulcers that provided a definition or a reference staging system.

(14). Most papers did not provide a clear cut-off duration to define the chronicity of wounds in the categories of PU, DFU, VU and AIU. Those papers that did include a specific duration in their definitions, did not agree on the timeline that defines an ulcer as chronic. For papers on DFU, an ulcer lasting 2–8 weeks was classified as chronic, in stark contrast to VUs, where chronicity was defined when ulcers were present for at least 6 weeks to 2 months. PUs and AIUs did not include duration in any of the reviewed papers.

A comprehensive definition of "chronic wounds" is essential in order to enhance patient care and strengthen the clarity of management guidelines. This new definition may include several clearly stated components adding to the actual duration of the wound, and take into account the aetiology of the wound. In addition, a scoring system for chronic wounds should be introduced, including characteristics such as recurrence, patient's age and sex, comorbidities, etc. for better informing patient management and improving transfer of new research findings. It is of note that such scoring and diagnostic criteria are used in the diagnosis and definition of other diseases, as exemplified by psychiatric diseases, or various inflammatory diseases, such as systemic lupus erythematosus or multiple sclerosis. The diagnostics within wound care would also significantly benefit from increased agreement regarding definitions. International disease coding systems, such as the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10), could eventually also include codes separating acute and chronic wounds in order to support better tailored treatments.

ACKNOWLEDGEMENTS

This research was supported by the A*STAR BMRC Strategic Positioning Fund (SPF) for Skin Biology awarded to the Institute of Medical Biology, and Lee Kong Chian School of Medicine, Nanyang Technological University Start-Up Grant.

REFERENCES

1. Greeley PW. Plastic surgical closure of chronic open wounds of the leg. Ind Med Surg 1953; 22: 22–23.
2. Carleson R, Garsten P. [Wound therapy with septofyllin, with special consideration of its effect on chronic leg ulcers]. Nord Med 1952; 47: 412–416 (in Undetermined Language).
3. Pai DR, Simerjit Singh M. Techniques in chronic wound management: review of the literature and recent concepts. J Nov Physiother 2013; 3: 1–7.
4. Cazander G, Pritchard DI, Nigam Y, Jung W, Nibbering PH. Multiple actions of Lucilia sericata larvae in hard-to-heal wounds: larval secretions contain molecules that accelerate wound healing, reduce chronic inflammation and inhibit bacterial infection. BioEssays 2013; 35: 1083–1092.
5. Nunan R, Harding KG, Martin P. Clinical challenges of chronic wounds: searching for an optimal animal model to recapitulate their complexity. Dis Model Mech 2014; 7: 1205–1213.
6. Dubhashi SP, Sindwani RD. A comparative study of honey and phenytoin dressings for chronic wounds. Indian J Surg 2015; 77: 1209–1213.
7. Martin P, Nunan R. Cellular and molecular mechanisms of repair in acute and chronic wound healing. Br J Dermatol 2015; 173: 370–378.
8. Leaper DJ, Durani P. Topical antimicrobial therapy of chronic wounds healing by secondary intention using iodine products. Int Wound J 2008; 5: 361–368.
9. Gould L, Abadir P, Brem H, Carter M, Conner-Kerr T, Davidson J, et al. Chronic wound repair and healing in older adults: current status and future research. J Am Geriatr Soc 2015; 63: 427–438.
10. Baba M, Davis WA, Norman PE, Davis TM. Temporal changes in the prevalence and associates of foot ulceration in type 2 diabetes: the Fremantle Diabetes Study. J Diabetes Complicat 2015; 29: 356–361.
11. Posnett J, Franks PJ. The burden of chronic wounds in the UK. Nurs Times 2008; 104: 44–45.
12. Banjare J, Bhalerao S. Obesity associated noncommunicable disease burden. Int J Health Allied Sci 2016; 5: 81–87.
13. Järbrink K, Ni G, Sönnergren H, Schmidtchen A, Pang C, Bajpai R, et al. Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review. Syst Rev 2016; 5: 152.
14. Frykberg G R, Banks J. Challenges in the treatment of chronic wounds. Adv Wound Care 2015; 4: 560–584.
15. Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009) Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6: e1000097.

ActaDV Acta Dermato-Venereologica ActaDV Advances in dermatology and venereology

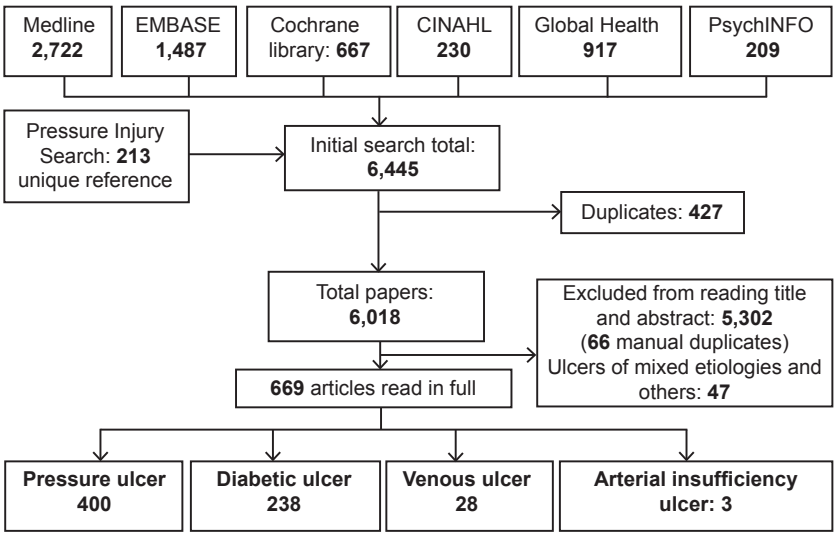


Fig. S1. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram. A PRISMA flow diagram depicts the flow of information through the different phases of a systematic review. It maps out the number of records identified, included and excluded, and the reasons for exclusion (15). Inclusion criteria were: papers referring to venous ulcers, arterial ulcers, diabetic foot ulcers or pressure ulcers; cross-sectional or prospective cohort studies; published from 2000 to 2015, in English. Exclusion criteria were: wounds secondary to surgical procedures, malignancies, chronic inflammatory diseases, infections, or burns; specific subsets of population (terminally ill patients, spinal cord injury patients, patients in special care units); randomized controlled trials, case-control studies, case reports, editorials, abstracts, conference proceedings; ulcers with mixed aetiologies.

ActaDV
Acta Dermato-Venereologica
ActaDV
Advances in dermatology and venereology