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Role of Therapeutic Index for Local Infections Score in Wound Assessment

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Abstract

Local wound infections pose a significant challenge, if detected late, leading to complications like systemic infections. Global nomenclature lacks uniformity, resulting in varied treatments for similar diagnoses. Early intervention is crucial, advocating for local antimicrobial therapy with diverse active agents to avoid systemic antibiotics and mitigate bacterial resistance. The Therapeutic Index for Local Infections (TILI) score, innovated by the German society Initiative Chronische Wunden (ICW), emerges as a pivotal solution in confronting diagnostic hurdles associated with local infections. Consisting of six non-specific clinical criteria, the TILI score not only streamlines the diagnostic process but also facilitates standardized treatment protocols, thereby fostering judicious antibiotic utilization across wound care facilities globally. By providing a structured framework for assessment, the TILI score empowers healthcare professionals to make informed decisions, ensuring optimal management of local infections while mitigating the risks associated with antibiotic overuse, thus safeguarding patient well-being and contributing to the global antimicrobial stewardship efforts. This study emphasizes the significance of the TILI (tissue, inflammation, locality, infection) score in the precise identification of local wound infections. It serves as a crucial tool in determining the necessity of employing local antimicrobial therapy and aids in monitoring the response to treatment for the purpose of evidence-based documentation. By effectively utilizing the TILI score, healthcare professionals can enhance diagnostic accuracy, optimize treatment strategies, and ultimately improve patient outcomes in the management of wound infections.

Keywords: Therapeutic Index for Local Infections (TILI) score, wound, assessment, infection

INTRODUCTION

Local wound infections are often missed or detected too late and pose a significant challenge in wound treatment. Complications can include deep infection which could lead to systemic infection and potentially lethal sepsis [1]. Local wound infections can also impair physiological wound healing [2, 3]. Therefore, early detection of local wound infections is an interdisciplinary challenge in daily practice, especially in the treatment of patients with acute and hard-to-heal wounds [4].

The nomenclature used to define uncomplicated contamination (i.e., the bacterial contamination is not pathological), from critical colonization to local or systemic infection, is not uniform worldwide [5]. It is therefore not surprising that patients in different medical institutions are given the same diagnosis but then treated differently [5].

If local wound infections are detected, local antimicrobial therapy should be performed. Wound products with different active agents are

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recommended for this purpose [1]. The use of systemic antibiotics should almost always be avoided to manage these local infections [6]. The targeted and restricted use of systemic antibiotics is important, particularly in light of the growing problem of bacterial resistance. An exception may be the treatment of patients with diabetic foot ulcers (DFUs) where systemic antibiotic therapy is more often prescribed for local infection in patients with DFUs than in patients with a pressure ulcer or venous leg ulcer. This is because a DFU local infection can quickly lead to systemic infection, especially in patients with poorly controlled diabetes (leading to immunosuppression) with a poor prognosis for amputation [7].

However, this approach would fit within the antibiotic stewardship framework, which calls for the responsible and targeted use of systemic antibiotics [8]. It should also be noted that local antimicrobial therapy should only be carried out for as long as medically necessary. In reality, many patients receive local or even systemic antimicrobial therapy for many weeks or months without any comprehensible objective reasons [9]. To address the issue outlined above, the German society Initiative Chronische Wunden (ICW) developed a score in order to make a clear diagnosis of local wound infection, from which it should be possible to determine for individual patients whether local antiseptic therapy is useful or not. The result of this work, carried out in consultation with members of ICW's advisory and executive boards, each of which consists of many experts from different medical fields, is the Therapeutic Index for Local Infections (TILI) score, and was first published in 2019 (Table 1) [10].

The TILI score consists of two different areas. In the first part, there are six non-specific clinical criteria for the diagnosis of local wound infections. Until now, it was unclear which and how many of these criteria had to be present for a diagnosis. In order to guarantee this with certainty, the first version of the TILI score proposed that all six 'no direct indication' criteria must be present in order to diagnose a local wound infection. In addition, there are also three criteria leading directly to an indication for antimicrobial wound therapy. These criteria may differ in different countries [11]. The TILI score was then presented at various international meetings, translated into several European languages, and implemented in daily practice in various European wound care institutions.

This study highlights the role of TILI score in identifying local wound infection and to decide whether to use local antimicrobial therapy and to monitor the response to the treatment for evidence-based documentation.

MATERIALS AND METHODS

This study was conducted in a tertiary care hospital in south India after obtaining the concerned department's scientific and ethical committee approval. Informed consent was taken from the patient & attendants. The TILI score was applied on a right grade 4 trochanter pressure ulcer (Figure 1) and score was 6/6 and 2/3 at the time of admission. The TILI score was recorded whenever the dressing was changed to know the response to the treatment.

Table 1. Therapeutic Index for Local Infections (TILI) score for the diagnosis of local wound infections.

No direct indication
Erythema to surrounding skin
Heat
Edema, induration, or swelling
Spontaneous pain or pressure[a]
Stalled wound healing
Increase and/or change of color or smell of exudate
Direct indication
Presence of wound pathogens[b]
Surgical septic wound
Presence of free pus

*; †This can vary between countries, for example, the detection of multidrug-resistant organisms such as meticillin-resistant *Staphylococcus aureus*

[a]Caution should be taken in patients with polyneuropathy or using painkillers.
[b]This can vary between countries, for example, the detection of multidrug-resistant organisms such as methicillin-resistant *Staphylococcus aureus*.

Figure 1. Right trochanteric grade 4 pressure ulcer with Therapeutic Index for Local Infections (TILI) score of 6/6 and 2/3 at admission.

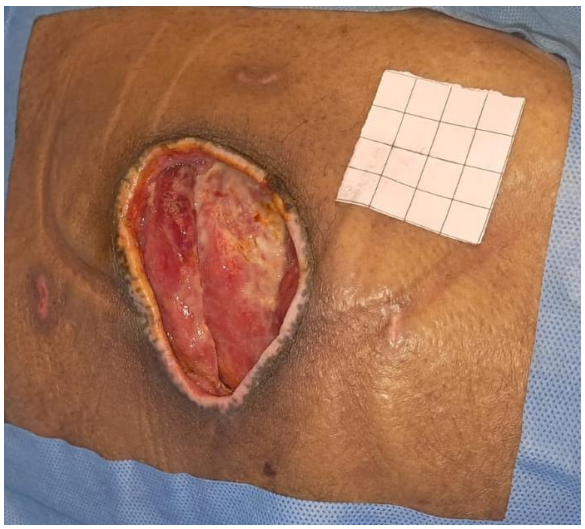

Figure 2. Right trochanteric grade 4 pressure ulcer with Therapeutic Index for Local Infections (TILI) score reduced from 6/6 and 2/3 to 4/6 and 1/3 after initiation of treatment.

RESULTS

The TILI score reduced from 6/6 and 2/3 to 4/6 and 1/3 after start of the treatment allowing us to know the response to the treatment (Figure 2). The treatment is still going on till the reporting of this study and the plan is to reconstruct with flap cover once wound score reduces to less than or equal to 2/6 and 0/3. We found TILI score useful not only in documenting the findings at the time of admission but also in guiding whether to start or not antimicrobial therapy and to know the response to the

treatment.

DISCUSSION

The indication for antiseptic wound therapy is assessed differently by health professionals in differing medical fields, and in different countries [1]. Although there have been previous repeated attempts to establish definitions and/or scores for diagnosis purposes, the challenge remains that there is no standard or generally accepted definition of local wound infection [11]. In this respect, the TILI score is a recently developed tool, providing an easy-to-use, objective, and comprehensive evaluation for the indication of local antiseptic wound therapy due to local wound infection. This is particularly important for health professionals with less clinical experience in the field of wound care [12–16].

The therapy and prevention of wound infections with antiseptics have a high priority in modern therapeutic concepts due to the development of antibiotic resistance, the risks of allergic and anaphylactic side-effects with topical antibiotic application, and the availability of highly effective antiseptics with good tolerability [17–19]. Various treatment options are available for antiseptic wound therapy [19, 20]. Whenever possible, the systemic administration of antibiotics should be avoided or should be used for the detection of systemic infections only. However, this demand does not justify the unintended long-term use of antiseptic wound therapies. Rather, the aim is to use modern antiseptics in a targeted, time-limited manner [18]. For this purpose, early, individual diagnosis and assessment of the patient is recommended.

An indication for the use of antiseptic wound therapy is the presence of a local infection [3]. However, the challenge is to diagnose local wound infection at an early stage and to distinguish it from systemic infection and other differential diagnoses [4]. For this reason, the TILI score should be used in daily clinical practice. If the criteria of the TILI score are met, antiseptic wound therapy should be performed [18].

The limitation of our study is that it is done on a single case. A large randomized double blind controlled study is required to validate our study.

CONCLUSION

We found TILI score useful not only in documenting the findings at the time of admission but also in guiding whether to start or not antimicrobial therapy and to know the response to the treatment.

Conflicts of Interest

None.

DECLARATIONS

None.

REFERENCES

1. International Wound Infection Institute. Wound Infection in Clinical Practice. Principles of Best Practice. London, UK: Wounds International; 2016.
2. Lorentzen HF, Gottrup F. Clinical assessment of infection in nonhealing ulcers analyzed by latent class analysis. Wound Repair Regen. 2006; 14 (3): 350–353. doi: 10.1111/j.1743-6109.2006.00131.x.
3. Murphy C, Atkin L, Swanson T, et al. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. J Wound Care. 2020; 29 (Suppl 3b): 1–26. doi: 10.12968/jowc.2020.29.Sup3b.S1.
4. Schwarzkopf A, Dissemond J. Indications and practical implementation of microbiologic diagnostics in patients with chronic wounds. J Dtsch Dermatol Ges. 2015; 13 (3): 203–209. doi: 10.1111/ddg.12611.

5. Dissemond J, Steinmann J, Münter KC, et al. Risk and clinical impact of bacterial resistance/susceptibility to silver-based wound dressings: a systematic review. J Wound Care. 2020; 29 (4): 221–234. doi: 10.12968/jowc.2017.26.12.727.
6. Amadou C, Denis P, Cosker K, Fagot-Campagna A. Less amputations for diabetic foot ulcer from 2008 to 2014, hospital management improved but substantial progress is still possible: a French nationwide study. PLoS One. 2020; 15 (11): e024252. doi: 10.1371/journal.pone.0242524.
7. O'Meara S, Al-Kurdi D, Ologun Y, et al. Antibiotics and antiseptics for venous leg ulcers. Cochrane Database Syst Rev. 2014; 1: CD003557. doi: 10.1002/14651858.CD003557.pub5.
8. Dissemond J, Gerber V, Lobmann R, Kramer A. TILI [(Therapeutic Index for Local Infections) – a new score for the diagnosis of local wound infections]. [In German.] Wundmanagement. 2019; 13: 283–287.
9. Bui UT, Finlayson K, Edwards H. The diagnosis of infection in chronic leg ulcers: a narrative review on clinical practice. Int Wound J. 2019; 16 (3): 601–620. doi: 10.1111/iwj.13069.
10. Jockenhöfer F, Chapot V, Stoffels-Weindorf M, et al. Bacterial spectrum colonizing chronic leg ulcers: a 10-year comparison from a German wound care center. J Dtsch Dermatol Ges. 2014; 12 (12): 1121–1127. doi: 10.1111/ddg.12540.
11. Parikh R, Mathai A, Parikh S, et al. Understanding and using sensitivity, specificity and predictive values. Indian J Ophthalmol. 2008; 56 (1): 45–50. doi: 10.4103/0301-4738.37595.
12. Seguí MM, Cabrero-García J, Crespo A, et al. A reliable and valid questionnaire was developed to measure computer vision syndrome at the workplace. J Clin Epidemiol. 2015; 68 (6): 662–673. doi: 10.1016/j.jclinepi.2015.01.015.
13. Argimon-Pallas JM, Jimenez-Villa J. Methods for Clinical and Epidemiological Research. 3rd edition. Barcelona, Spain: Elsevier España; 2004.
14. Gurusamy KS, Koti R, Toon CD, et al. Antibiotic therapy for the treatment of methicillin-resistant *Staphylococcus aureus* (MRSA) in non-surgical wounds. Cochrane Database Syst Rev. 2013; 11: CD010427. doi: 10.1002/14651858.cd010427.pub2.
15. Dissemond J, Böttrich JG, Braunwarth H, et al. Evidence for silver in wound care: meta-analysis of clinical studies from 2000–2015. J Dtsch Dermatol Ges. 2017; 15 (5): 524–535. doi: 10.1111/ddg.13233.
16. Hübner NO, Kramer A. Review on the efficacy, safety and clinical applications of polihexanide, a modern wound antiseptic. Skin Pharmacol Physiol. 2010; 23 (Suppl): 17–27. doi: 10.1159/000318264.
17. Kramer A, Dissemond J, Kim S, et al. Consensus on wound antisepsis: update 2018. Skin Pharmacol Physiol. 2018; 31 (1): 28–58. doi: 10.1159/000481545.
18. Huebner C, Flessa S, Huebner NO. The economic impact of antimicrobial stewardship programmes in hospitals: a systematic literature review. J Hosp Infect. 2019; 102 (4): 369–376. doi: 10.1016/j.jhin.2019.03.002.
19. Dissemond J, Augustin M, Eming SA, et al. Modern wound care-practical aspects of non-interventional topical treatment of patients with chronic wounds. J Dtsch Dermatol Ges. 2014; 12 (7): 541–554. doi: 10.1111/ddg.12351.
20. Delmore B, Cohen JM, O'Neill D, et al. Reducing postsurgical wound complications: a critical review. Adv Skin Wound Care. 2017; 30 (6): 272–286. doi: 10.1097/01.asw.0000516426.62418.48.

