Conflict of interest

Dr. Vandeput JJ. and Dr. Nelissen M. are practising plastic surgeons in Belgium and none of the authors have a Conflict of Interest.

Dr. Vandeput is director at the "International Burn Foundation of the United States", awarding the well known "Tanner-Vandeput-Boswick" prize as announced on the cover of our journal 'Burns'.

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Letter to the Editor

Burns surgery antiseptic preparation: A UK national survey

Dear Editor,

Patients with burn wounds are extremely susceptible to infections due to disruption of the physical and immune barrier against invasion and colonisation of microorganisms. Burn wound infections are a major source of morbidity and mortality worldwide. Topical antiseptic agents are used to clean burn wounds to prevent growth of microorganisms, helping to prevent infection and promote wound healing. The aim of this study was to survey which antiseptic agents and regimes are currently being used across UK burns services and evaluate any differences in practice.

1. Method

We conducted a nationwide telephone survey of nineteen UK burns services during September 2018 to find out which theatre antiseptic agents are being used and the number of preparations being performed.

2. Results

Nine units (47%) used a single preparation regime, three units (16%) used a 'social clean' followed by a final preparation regime and seven units (37%) used two 'social cleans' followed by a single final preparation regime. Amongst the preparation agents used, chlorhexidine was the most popular, used in fifteen units (78%) as a single agent or in combination with other agents. Povidone-iodine was used in twelve units (63%) and Prontosan® (B.Braun Melsungen AG, Carl-Braun-Straße 1, Melsungen, Hessen 34212, Germany) in one unit (5%). A combined regime of povidone-iodine and chlorhexidine preparations was used in seven units (37%).

3. Discussion

Topical antiseptics are felt to be an important component of burn wound care together with anti-microbial dressings and early surgical excision and grafting to prevent infections. Povidone-iodine (oxidiser) and chlorhexidine (emulsifier) preparations have similar broad-spectrum activity and are the most popular agents used in UK burn care. A recent systematic review showed that few studies have compared the two antiseptics in burn wounds but there is low certainty evidence that average time to wound healing maybe slightly shorter in patients treated with povidone-iodine [1]. Interestingly, several recent studies have shown a combination of skin preparation with chlorhexidine and povidone-iodine reduces surgical skin site infections compared to povidone-iodine or chlorhexidine alone in clean surgery [2]. Data was collected from various individuals in each burn service including consultants, junior doctors and scrub nurses. Our results may therefore not represent the full spectrum of intra-departmental variations within each burn service.

4. Conclusion

Wound infection is a major challenge in burn care. Our survey has identified the variation in the antiseptic agents and regimes used in UK Burns services. There is currently a lack of high-quality evidence favouring the use of povidone-iodine alone, chlorhexidine alone or in combination in burn wounds. Further research is required to evaluate which antiseptics lead to the greatest reduction in burn wound infection and therefore better outcomes for patients. Perhaps in the future such evidence could lead to a standardised evidence-based regime between burns services.

Conflict of interest

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Letter to the Editor

Implications of adipose derived stem cells (ASCs) in management of burns

Dear Editor,

Approximately 180,000 deaths per annum are caused by burns and most of these fatalities happen in low and middle-income countries. The decreasing trend of deaths secondary to burns is notable among high-income countries [1]. Massive wounds of burn patients are among one of the challenges that are faced by surgeons as coverage choices are restricted, chiefly due to limitations of donor sites [2]. Many studies to assess the efficacy of the latest techniques and new approaches to manage large burn injuries are being done.

The invention and identification of adult mesenchymal stem cells (MSCs) have enabled the development of stem cell-based therapies for clinical use, over the recent years. Adipose tissue being a multipotent organ contains numerous cellular varieties with repair and regenerative abilities like adipose-derived stem cells (ADSCs), pre-adipocytes, pericytes, adipose-resident macrophages and endothelial progenitor cells, etc [3]. Adipose-derived stem cells (ASCs) were discovered as MSCs and since 2001, have been the topic of interest in regenerative medicine and tissue engineering. There were multiple terms for stem cells derived from fatty tissue like adipose-derived stromal cells, processed lipoaspirate cells, adipose-derived mesenchymal stem cells and others but in 2004, the accord was reached on the term of adipose-derived stem cells or ASCs [4]. ASCs are almost like bone marrow-derived mesenchymal stem cells (MSCs) therein can differentiate into varieties like adipocytes, osteoblasts, endothelial cells, epithelium and neurons. Nearly, 5000 ASCs can be extracted from one gram of fat tissue [2]. Clinically significant supply of ASCs is isolated from subcutaneous fatty tissues of the abdomen, thigh, and arm that are obtained by process of lipoaspiration. ASCs from different anatomical areas have different characteristics similarly ASCs from white fatty tissue differs from brown adipose tissue [4].

ASCs are of prime importance in regenerative science due to the secretion of specific soluble multiple growth factors, together with basic fibroblast growth factors (bFGF), insulin-like growth factor one, vascular endothelial growth factor (VEGF), transforming growth factor (TGF)-β1 and hepatocyte growth factors (HGF) that stimulate recovery of damaged tissues [4]. ASCs specifically have shown to reinforce growth through reepithelialization, granulation formation along with the release of growth factors [5]. The platelet derived growth factor-AA (PDGF-AA) in ASCs and endothelial progenitor cells, plays a considerable role to augment wound healing [6]. Moreover, these stem cells possess distinctive paracrine feature by expression of different kinds of growth factors receptors and thus mediate tissue regeneration [4]. Not only this the physiological secretome of fatty tissue within the liquid extracellular fraction of lipoaspirate is also an economical agent for skin regeneration. The liquid material of lipoaspirates, presently disposed as a waste by-product, contains components with regenerative properties. Adipose tissue derived extracellular fraction (AT-Ex) has its impact on cell proliferation, migration and aging in dermal cells.

Exceptional regenerative features of ASCs make them considerable option together with grafting in burn wounds as adipose-derived secretome stimulates the proliferation rate of adipose-derived mesenchymal stem cells (ASCs), increasing the sustainability of autologous grafts along with epidermal and dermal cell proliferation in a dose-dependent manner. Also, it delays cell death and accelerates fibroblast migration. The extracellular fraction of lipoaspirates can be used as an associate for practical tissue repair like skin diseases (acute and chronic wounds, burns, ulcers, and vitiligo) [3].

Chronic inflammation generates complicated microenvironments not amenable to treatment with single growth factor and to overcome this the optimum therapeutic strategy is sustained delivery of growth factors that are able to face the abundance of proteases within the environment of chronic inflammatory wound. Moreover, the right growth factors should be delivered in the precise concentrations to attain desirable outcomes [6]. Considering these specificities of ASCs, further studies are warranted to analyze its clinical outcomes in various types of burn wounds, as it is believed to revolutionize burn management due to its affordability, ease of availability and good results.