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Burn Care of the Elderly

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Introduction

Successful elderly burn care represents a vast challenge, as elderly is one of the fastest growing populations but at the same time one of the more susceptible populations to burn injuries. This is due to a thinning skin, decreased sensation, mental alterations, premedical histories or other contributing factors. The high risk of suffering from a burn injury in the elderly population along with the rapid growth of this population will change the burn treatment paradigm in the near future. However, little or almost no progress has been made over the last several decades, improving the outcome of burn elderly. The LD50 for elderly is around 30 to 35% TBSA burn and that hasn't changed much. Not only acute survival is an issue for the elderly burn population, it is also long-term outcomes. There are very few studies indicating what the quality of life for elderly is after discharge from the hospital.

Despite burn care provider recognition of poor outcomes of elderly patients, the reason why this patient population is doing so poorly is essentially unknown and at this time, there is no concerted effort to improve the outcome. Therefore, this white paper and round table are to come up with novel avenues as well as ideas how to improve the elderly outcome. The aim of the research over the next decades is to improve outcome of elderly patients but also to identify parameters that define the vulnerability of the elderly to the complication and the sequelae of burns. The presentation as well as the round table discussion identified various needs and areas for elderly burn care; including pre-hospital admission to acute hospitalization, wound care, rehabilitation, recovery and long term outcomes that are required and that should be task force and assignments to improve the outcomes of elderly on all aspects.

Prevention

Starting with the primary and secondary prevention, despite the knowledge that elderly are prone to increased risk for burn injuries, little is known about the specific risks and aspects of prevention that could improve the outcome:

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Task: to define risk practice and understand behavior modifications in the elderly.

It may be most effective and efficient to do so with partnership with broader programs and injury prevention in the elderly, such as fall groups or various institutes which deal with elderly behavior modifications. Once we have identified specific prevention aspects, the next major important step is to have community education for appropriate first aid.

Pre-hospital

Based on the presentation and round table discussion, the major concern was that elderly seem to be neglected and the severity of burn is ignored. There were various incidents where even small burns were not taken to a burn appropriate centre, leading to infected wounds or even to a septic state for elderly. Therefore, a clear definition and treatment guidance for elderly must be defined.

Task: to modify ABA and ACS referral criteria to include a statement about the need to refer all burns, regardless of burn size in the elderly to specialized burn centres.

This is a notion to be added into the burn referral criteria as then the next step would be to educate the lay and professional community about the need for treatment at burn centres.

Admission and Acute hospitalization

During the acute care of burn elderly, we know that the LD50 is decreasing in size with an increase in age. There are various aspects of the acute care of burn elderly that are currently not well defined and where various approaches can make a difference how elderly can survive their injury better. The round table identified the need to have an elderly specific resuscitation protocol and to monitor the success of the resuscitation status. A suggestion would be to apply non-invasive monitoring of volume status in elderly to determine the adequacy of perfusion. It is currently known whether elderly have an increased resuscitation need or decreased resuscitation need. Is this co-related to their cardiac function or associated organ function? Therefore, monitoring and fine tuning resuscitation is one of the next tasks.

Task: to identify special needs for elderly resuscitation, and to identify tools how to monitor successful and effective resuscitation in elderly.

The other aspect with elderly definitely express is the infection control. Screening on admission as well as subsequently for multi-drug resistant organisms as well as modification of thresholds for contact isolation as the elderly most likely will benefit from isolation. Elderly have an increase incidence of infections and if turned into a sepsis after 14 days in hospital stay, this is usually associated with 100% mortality. Others and we believe that the elderly are less resistant to these bacterial contaminations and require a specific guidance in the treatment of infection control.

Task: to screen elderly at admission for multi-drug resistant organisms and to screen elderly throughout hospitalization for these organisms as well as on an on-going basis. resuscitation, and to identify tools how to monitor successful and effective resuscitation in elderly.

The other aspect of acute care is nutrition. The elderly patients experience a hyper-metabolic response, which was shown that increases over time whereas it decreased in normal patients. This leads to the question, what are the exact nutritional demands of an elderly? Does an elderly have a very similar nutritional demand, a metabolic demand, as a younger patient or not? At this time, we base our formulas on non-elderly specific.

Task: to determine an elderly specific nutrition protocol, when, what and how to feed.

It is well documented that elderly have various different responses in their pharmacogenomic and pharmacologic response to medications than adults. Major central aspects of the medication string acute hospitalizations are the aspects of analgesia/pain management, as well as management of agitation and delirium. These are very complex questions that are at the current state, controversial and yet little is known about these aspects.

Task: to determine elderly specific medications to treat pain, as well as management of agitation and delirium.

The next essential sequence is the identification of appropriate wound care, which bridges acute care and long-term outcomes. Elderly patients have a different skin physiology, different skin biology as well as healing process. It has been documented that elderly fail to heal their wounds very frequently. However, we have various questions that are associated with wound healing that are still not very specific. A) It is currently not known whether an early excision is beneficial for elderly or to wait longer is beneficial in elderly. B) one stage vs. multiple stage procedures. It is not clear whether is more beneficial to be more gentle vs. to be more aggressive in elderly populations. C) difference in wound healing in elderly vs. younger patients. We need to understand more about the deficiencies of elderly in terms of production of growth factors, stem cell biology as well as cell activity, therefore, to come up with more specific biological differences between those two patient populations. D) wound coverage – do elderly have a different need for wound coverage? Can Integra be applied or other topical agents be applied with benefit or is it disadvantageous? Therefore to identify wound coverage materials for elderly in terms of achieving wound healing is another aspect that has to be identified. This all leads to the question then, the major aspect, to create a registry for elderly burn care to ask these questions, which should then lead to a phase 3 multi-disciplinary trial to determine the excision and grafting process in elderly burn patients.

Task: to identify elderly specific wound healing which will be sub-categorized to mine existing registries and create new international registries for the elderly burn management to determine a timing for first and subsequent excision.

Long-term outcomes

Long-term outcomes in elderly, are currently, very much unknown. It is not very clear if elderly survive, what the mortality is within the first year. There is evidence, that when elderly in general are admitted to a long-term facility, or admitted to a nursing home, they have a very poor long-term outcome and usually die within 2 years. For burn elderly patients, it is currently not clear what the long-term prognosis is. Therefore, identifying and then optimizing the long-term care for the elderly is another task that needs to be done. At this stage, the long-term follow-up for burn elderly is maybe single handed and only by physicians but not as a multi-disciplinary team. It therefore seems imperative that long-term follow-up should be conducted by a team that specializes in elderly burn care. We suggest, that the burn clinic to follow up elderly burn patients as a team within a team for elderly burn care. This team focuses on pain management, psychological treatment, peer support, nutrition supplementation, if needed palliative care, rehabilitation, occupational therapy as well as of course wound care, medical and surgical needs. This team specializes and can be consulted if needed for elderly burn care. The hypothesis for the team within a team would be improve acute and long-term outcomes and increase the wound quality for elderly patients.

Task: to identify elderly specific outcomes long-term. Additionally, create elderly specific long-term follow-up teams (a team within a team), including nutrition, Psychology, OT/PT, RN, Social worker, and MD.

Also associated with the long-term outcome is the rehabilitation and recovery aspect. There is conflicting information about the rehab aspect, which seems counter-intuitive. One approach in elderly is to not mobilize elderly, to let them rest. However, it seems that early aggressive mobilization which is tied to nursing as well as their medication, is beneficial for elderly, to start exercising and have a rehabilitative approach is very important. To conduct exercise training at the bedside and very quickly transition to the ICU or the ward leading to exercise long-term, may improve patients' ability to move as well as their subsequent rehabilitative aspect. Another specific question that is for elderly care, is when and how can elderly be transferred to an in-patient rehab and what burn size? Task is to identify the threshold in terms of burns size and the timing to transfer for elderly to in-patient rehabilitation.

Task: to develop protocols for early aggressive mobilization of burn elderly. To determine the ideal time point to transfer elderly to a rehabilitation specific facility

Another important aspect in terms of long-term outcome and well-being is, that elderly have experienced loss and grief and having known additional significant injury, can augment

grief, depression as well as stress disorders. Therefore an elderly is prone to increased psychological stress. The task is to routinely psychologically screen elderly for grief, depression and PTSD. This will then lead as a consequence once identified specific counseling and support for families as well as the elderly has to be present. Elderly that have not had any social structure or support from families may require community or more specific support. It is also beneficial if there is a specific home care in place for burned elderly which then will support their transition out of the hospital into the home.

Task: to routinely screen elderly for grief, depression, PTSD and social needs to improve transition as an outpatient and long-term outcome.

Summary

As aforementioned there are various central tasks and question on how to improve outcomes of elderly. Due to the complexity of these tasks we are suggesting to put forward a notion to the Board of Trustees of the American Burn Association to create an ad-hoc committee that has an interest in the care of elderly, which can assign tasks as well as coordinate efforts of various investigators with the goal to improve outcomes and life quality of elderly burn patients. The proposed ad-hoc committee will review the progress and assign tasks; Databases to be accessed will be NBR, in conjunction with creating novel and elderly specific databases and registries. The committee also reaches out to create strong collaborations, e.g. ISBI and other stakeholders. Lastly, in terms of funding we identified elderly specific funding agencies:

- Institute of Aging of the National Institute of Health
- VA
- NIDILRR
- NGO'S
- Partnership with Trauma research

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