

521 Maintaining Central Line Patency in Burned Children

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Introduction: Children with major burn injury frequently require prolonged central venous access to assure appropriate fluid management and pain control. Central venous catheters in children frequently develop clots that prevent drug administration, requiring administration of tissue plasminogen activator (TPA). The purpose of this study was to identify the frequency and efficacy of TPA use in burned children with central venous catheters (CVC).

Methods: This retrospective chart review evaluated all children requiring CVC admitted to our tertiary pediatric burn center from 2018-2019. Data collected included patient demographics (age, burn size, hospital length of stay (LOS)), catheter-related data (number of central lines, lines replaced due to clotting), TPA administration (number of times administered, successful TPA administrations, how often repeated), and line clotting data (time from insertion to clot, interval between TPA order and administration).

Results: In 2018, 116 lines were placed in 49 children with mean age of 8.4 years and mean burn size of 29%, intensive care unit LOS was 24 days. TPA was infused in 20% of lines to relieve obstruction and was successful in relieving the clot in 21% (5/23). The interval between identification of the obstructed line to TPA order was 191 minutes, with the administration of TPA 83 minutes after order placement. The average time from identification of obstruction to TPA administration was 257 minutes. In 2019, 150 lines were placed in 65 children with mean age of 5.2 years and mean burn size of 25%, LOS was 13 days in the PICU. TPA was infused in 5% of lines to relieve obstruction and was successful in relieving the clot in 0% (0/8). The interval between identification of the obstructed line to TPA order was 117 minutes, with the administration of TPA 49 minutes after order placement. The average time from identification of obstruction to TPA administration was 158 minutes.

Conclusions: The incidence of obstruction in pediatric central venous catheters in our unit decreased from 26% in 2018 to 3% in 2019. TPA was successful in clot resolution in only 5% (2018), and 0% (2019). Based on our results, we targeted areas for improvement including: Standing order for TPA; staff education on TPA use; decreasing our average time to identify, order, and administer TPA; and standardizing the frequency of flushing unused central venous catheter lumens with heparinized saline flush.

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522 Food Deserts and Burn Wound Healing - Does Geography in an Urban Environment Matter?

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Introduction: Many burn injury victims in the United States live in regions designated as food deserts. The United States Department of Agriculture (USDA) defines food deserts as low-income areas where a substantial number of residents do not have access to a supermarket. Nutrition is known to be critical to wound healing. The purpose of this investigation was to determine if there is a relationship between residence in a USDA designated food desert, burn patient comorbidities, and wound healing at an urban academic medical center.

Methods: We performed a retrospective review of burn injured patients at an ABA verified urban academic burn center between September 2018 and April 2021. Inclusion criteria were burn injury of less than 20% total body surface area (TBSA), age \geq 18, and single operation for split thickness skin grafting. Zip codes were used in conjunction with the USDA Food Access Research Atlas to classify residence in food deserts. The primary outcome was donor site time to healing. A multivariable logistical regression analysis was performed to evaluate risk factors for poor wound healing at an urban academic burn center and to determine if residence in a USDA delegated food desert was one of those risk factors.

Results: A total of 150 patients were identified for inclusion from September 2018 through April 2021. There were 73 women (48.7%) and 77 men (51.3%). The median age was 48.5 (IQR 34.0, 58.0). The average body mass index (BMI) was 28.2 (6.6). Age ($p=0.60$), sex ($p=0.35$), hypertension ($p=0.74$), chronic obstructive pulmonary disease ($p=0.076$), hyperlipidemia ($p=0.77$), congestive heart failure ($p=0.47$), and BMI ($p=0.37$), and time to donor site healing ($p=0.55$) were not significantly different between patients who lived in food deserts and those who did not. Patients who lived in food deserts, however, had a higher incidence of diabetes ($p=0.05$). The multivariable model also shows that time to healing is not different between patients who live in food deserts and those who did not. However, the multivariable model shows that patients with diabetes have an increased time to healing ($p=0.002$).

Conclusions: Residence in a USDA delegated food desert does not significantly influence time to healing of donor sites in burn injured patients. However, diabetes is significantly higher in patients who live in USDA delegated food deserts, and diabetes demonstrates a significant delay in wound healing. This is the first study comparing residence in a USDA food desert, burn patient comorbidities, and time to wound healing in an urban burn population.