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Gunshot Injury Paraplegics—A Population Dying a Slow, Irreversible, and Expensive Death—A Viewpoint on Preventing Pressure Ulcers

To the Editor—Over the last 20 years, healthcare expenditure in the United States has been a subject of immense national interest. Given the increase in healthcare spending (>15% of the gross domestic product[1]), healthcare agencies are giving more attention to disease prevention in a variety of healthcare areas including infection prevention, antibiotic stewardship, and prevention of pressure ulcers.

While clinicians are very familiar with pressure ulcers in elderly bedridden patients, pressure ulcers are also a serious complication among spinal cord injury (SCI) paraplegics. The annual incidence of pressure ulcers in SCI paraplegics has been reported to be 23%.[2] In the United States, most SCIs are an unfortunate result of gunshot injuries; this is especially true in metropolitan Detroit. Annually, a major tertiary-care hospital in Detroit treats 40–60 gunshot SCI paraplegic patients (GIPs) with pressure ulcers.[3] A recent study conducted at the Detroit Medical Center reported that 201 gunshot-SCI patients with pressure ulcers accounted for 395 admissions (including readmissions) between 2004 and 2008. During this study period, the cumulative median length of hospital stay per patient was 12 days (interquartile range, [IQR], 6–24 days), resulting in a mean adjusted cost of US$19,969 (± $6,639) per patient.[3]

The number of GIPs is growing exponentially,[4] and GIPs with pressure ulcers are frequently admitted to the hospital, thus contributing significantly to hospital costs. The economic burden of treating pressure ulcers in this population is enormous but underappreciated. The annual cost of treating pressure ulcers in the United States in paraplegics with or without SCIs has reached a stunningly high $11 billion.[5] The estimated cost associated with healing a single pressure ulcer can reach $40,000.[5] Are government officials knowledgeable enough and aware of this enormous economic burden? Are healthcare professionals equipped to deal with this unfortunate patient population?

Let us consider the following scenarios of 2 gunshot SCI paraplegic patients at a tertiary-care hospital in Detroit: These 2 gunshot SCI paraplegic patients were admitted with pressure ulcers; both were male African Americans in their late 30s and belonged to low-education and low-income demographic groups. Despite their similarities in age and circumstance, their hospital costs were dramatically different. Costs for hospitalization for the first patient were moderate at $46,300, whereas the hospital costs for the second patient reached $262,168. The higher costs for the second patient resulted from an infected pressure ulcer: this patient was readmitted 3 times, and his treatment included several diagnostic procedures (including MRIs) and surgical interventions (ie, incision and drainage).

Development of a pressure ulcer in a paraplegic patient can be devastating socially, emotionally, and financially. An American soldier with a SCI is cared for in a very supportive environment. On the other hand, an African-American GIP residing in Detroit with low education, low income, and a poor support system has very limited resources to support his physical and mental health. Such destitute patients in the inner city are living slow but irreversible and expensive death sentences.

Through value-based purchasing, the Centers for Medicare and Medicaid Services (CMS) has begun to decrease payments to hospitals with excessive 30-day readmissions. The CMS will not provide hospitals added insurance reimbursement when pressure ulcers develop in the hospital. With the advent of these new regulations, what are we doing to prevent pressure ulcers in GIPs? In the last decade, both medical and surgical treatment modalities for pressure ulcers have progressed remarkably. However, there are major deficiencies in preventing pressure ulcers in GIPs.

Healthcare reforms should include more incentives for prevention and early intervention of pressure ulcers among GIPS.

Public–private collaboration should incentivize providers to effectively manage care for GIPs. Special paraplegic health clinics should be set up. These clinics should utilize a large team of multidisciplinary healthcare professionals, including internists, psychiatrists, surgeons, wound care nurses, physical therapists, nutritionists, and social workers who can help improve the overall health of these patients.

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Occupational Severe Fever With Thrombocytopenia Syndrome Following Needle-Stick Injury

To the Editor—Severe fever with thrombocytopenia syndrome (SFTS) is an emerging hemorrhagic fever-like illness caused by a novel bunyavirus. SFTS bunyavirus (SFTSV) infection causes a wide variety of clinical manifestations that range from asymptomatic infection to various grades of severe disease. The average case fatality rate of SFTS is 12%.[1] SFTS disease is typically transmitted via tick bite[2]; however, sporadic human-to-human transmitted SFTS cases have also been reported.[3–6] In 2015, a needle-stick injury event caused by an SFTS patient occurred in Korea but did not result in infection.[7] Here, we describe the first 2 cases of occupational SFTS acquired by needle-stick injury in a tertiary hospital in Jiangsu Province, China.

Case 1: On May 22, 2016, a 46-year-old male with a 4-day history of abrupt fever and fatigue was admitted to our hospital. Laboratory results indicated leukopenia and thrombocytopenia. On May 24, his condition continued to worsen, developing multiple organ dysfunction syndrome (MODS) and coagulation disorder. A 26-year-old female nurse, when collecting blood from this patient, sustained an accidental needle-stick injury with the catheter stylet. The needle stick pierced her middle finger and caused a deep, blood-letting injury. She immediately encouraged the bleeding at the site of puncture and disinfected the wound with iodine. On May 26, real-time reverse-transcriptase polymerase chain reaction (RT-PCR) assay showed positive for SFTSV for the index patient with a viral load of 6.3×10^4 copies/mL. On June 5, the nurse presented with a fever of 39.0°C along with fatigue, chills, and poor appetite. She received empirical ribavirin and other supportive treatment. The next day, RT-PCR confirmed the presence of SFTSV in the blood of both patients, and the viral load in the nurse was 1.6×10^3 copies/mL. On day 10, she was fully recovered (Figure 1A).

Case 2: On October 17, 2016, a 70-year-old man was admitted to our hospital with a 5-day history of abrupt fever, leukopenia, thrombocytopenia, and coagulation disorders. A history of tick bite was confirmed. A 35-year-old physician suffered a needle-stick injury while collecting his arterial blood. While removing the syringe from the patient, his right hand (holding the syringe) was bumped by a passerby, resulting in a 2.0-cm-deep wound on his left palm via needle stick. He promptly disinfected the wound. SFTSV RNA was detected from serum of the index patient with a viral load of 1.58×10^9 copies/mL. On day 5 after exposure, this physician developed a low-grade fever and mild chills. He had progressive leukopenia and thrombocytopenia for the following 4 days. On day 6, he was admitted to our hospital and started ribavirin and other supportive regimens. On day 9, his clinical presentations of nausea, vomiting, and fever were resolved. However, his laboratory test still indicated leukopenia, neutropenia, and elevated level of liver related enzymes. SFTSV RNA was identified from his serum with a viral load of 1×10^3 copies/mL. On day 14, his laboratory result returned to normal. On day 28, his blood sample was negative for SFTSV RNA (Figure 1B).

Both healthcare workers (HCWs) denied the history of tick bite, exposure to wild animals, or contact with other SFTS patients before disease onset. Furthermore, they developed SFTS symptoms after a brief incubation after exposure, and