Nerve trauma of the lower extremity: evaluation of 60,422 leg injured patients from the TraumaRegister DGU® between 2002 and 2015

Torge Huckhagel1, Jakob Nüchtern2, Jan Regelsberger3, Mathias Gelderblom2, Rolf Lefering4 and the TraumaRegister DGU5

Abstract

Background: Nerve lesions are well known reasons for reduced functional capacity and diminished quality of life. By now only a few epidemiological studies focus on lower extremity trauma related nerve injuries. This study reveals frequency and characteristics of nerve damages in patients with leg trauma in the European context.

Methods: Sixty thousand four hundred twenty-two significant limb trauma cases were derived from the TraumaRegister DGU® between 2002 and 2015. The TR-DGU is a multi-centre database of severely injured patients. We compared patients with additional nerve injury to those with intact neural structures for demographic data, trauma mechanisms, concomitant injuries, treatment and outcome parameters.

Results: Approximately 1.8% of patients with injured lower extremities suffer from additional nerve trauma. These patients were younger (mean age 38.1 y) and more likely of male sex (80%) compared to the patients without nerve injury (mean age 46.7 y; 68.4% male). This study suggests the peroneal nerve to be the most frequently involved neural structure (30.9%). Patients with concomitant nerve lesions generally required a longer hospital stay and exhibited a higher rate for subsequent rehabilitation. Peripheral nerve damage was mainly a consequence of motorbike (31.2%) and car accidents (30.7%), whereas leg trauma without nerve lesion most frequently resulted from car collisions (29.6%) and falls (29.8%).

Conclusion: Despite of its low frequency nerve injury remains a main cause for reduced functional capacity and induces high socioeconomic expenditures due to prolonged rehabilitation and absenteeism of the mostly young trauma victims. Further research is necessary to get insight into management and long term outcome of peripheral nerve injuries.

Keywords: Peripheral nervous system, Nerve, Lower extremity, Lower limb, Leg, Damage, Injury, Epidemiology

Background

Trauma of the upper and lower extremity is often combined with additional peripheral nerve injury (PNI). In a single-center study 920 out of 5721 patients with injured extremities suffered from associated nerve lesions with the need of nerve specific surgical procedures like suture or grafting [1]. In another series PNI could be detected by clinical examination and electrodiagnostics in 34% of patients with traumatic brain injury during the postacute care [2]. According to an investigation from the Iran National Trauma Registry database (n = 16,753 patients) 1.3% of all trauma victims suffer from PNI, but this proportion may be dependent from the socioeconomic context [3]. The situation in European countries with distinct conditions and regulations might be different and has not been elucidated in detail by now despite of its high therapeutic relevance and diminished quality of life resulting from reduced functional capacity, pain (e.g.