

Epidemiology of *Conus-Cauda Equina* syndrome in the Spinal Unit of the Vicenza General Hospital

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Abstract

The Spinal Unit of the General Hospital of Vicenza (VGH) admits patients with Spinal Cord Injury (SCI) after discharge from Neurosurgery and Reanimation Divisions of Veneto Hospitals. The *Conus-Cauda Equina* syndrome is characterized by bladder and intestines areflexia, pelvic and legs flaccid paralysis and anesthesia. This "rare disease" affects mainly adults and the most common etiology is traumatic lumbar slipped disc. Demographic data, etiology, the need of surgery, duration of hospitalization, bladder managements, and mobility at admission and discharge were revisited in 159 stories of SCI patients at their first admission to the Spinal Unit of VGH from January 1, 2005 to June 30, 2008. In our sample the etiology was traumatic in 12 patients, non-traumatic in 7 patients. 4 and 15 patients were classified complete and incomplete lesion, respectively (ASIA Scale). Mobility: of the 4 patients with complete lesion, at discharge 2 used only wheelchair for self transfer, 1 used common leg braces with walking aid (e.g. crutches) and 1 just one crutch. Of the 15 incomplete-lesions, at the discharge 10 did not need wheelchair for transfer: among them 2 used walker (1 with leg braces); 4 used walking aids (2 with leg brace); 3 used just one crutch, 1 used AFO. All patients have been treated with conventional rehabilitation strategies for enhancing lower limbs function. At the same time these patients had active exercise for upper limbs and training for daily mobility tasks (transferring, bed mobility and sitting). This is a pretty opportunity to engage a long and wide road that leaded us to be partners in the 2008Rise2-Italy Project. We have not long experience with electrical stimulation, but we believe that we have to consider this approach to give more chance to our patients in their rehabilitation, possibly in less time.

Key Words: Epidemiology, *Conus-Cauda Equina*, Spinal Unit of the Vicenza General Hospital

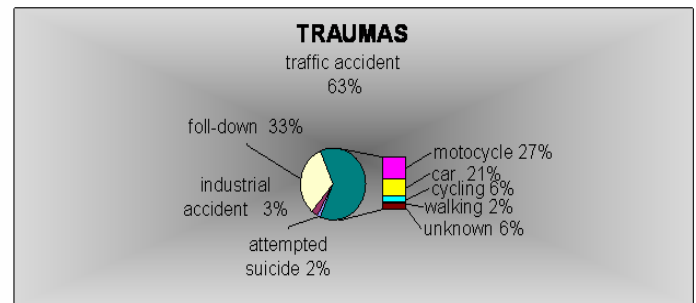
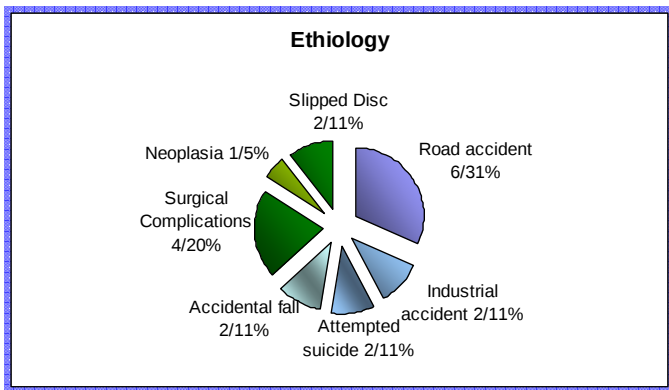
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The General Hospital of Vicenza (VGH) hospitalizes patients with Spinal Cord Injury (SCI) after discharge from Neurosurgery and Reanimation Divisions of Veneto Hospitals. The Spinal Unit is one of the two Regione Veneto High Specialization Rehabilitation Units. They follow the guide-lines of The Istituto Superiore di Sanità (ISS). ISS is the leading technical and scientific public body of the Italian National Health Service, whose activities include research, control, training and consultation in the interest of public health protection. The Cauda Equina Syndrome is characterized by bladder and intestines areflexia, legs flaccid paralysis and pelvic anesthesia. It is a "rare disease": incidence per year is 3.4 per million people, and prevalence 8.9 per 100.000 Italians. It affects adults, though any-age patients are possible. The most

common etiology is lumbar slipped disc. We revisited 159 stories of SCI patients at their first admission to the Spinal Unit of VGH from 01/01/05 to 30/06/08. Demographic data, etiology, the need of surgery, duration of hospitalization, bladder managements, and mobility at admission and discharge were collected. The mean age was 43 years (range 17-73); 13 males e 6 females. From 2005 to 2008 we observed an increase of the syndrome. In our sample the etiology was traumatic in 12 patients, non-traumatic in 7 patients. Road accident was the main traumatic cause (6 pt); among non-traumatic the most representative was post surgery (4). 16 patients were workers or students. 4 and 15 patients were classified complete and incomplete lesion respectively (ASIA Scale). At the beginning all 4 inpatients with complete lesion had permanent

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bladder catheter and all of them passed through intermittent catheterism becoming outpatients. About the 15 patients with incomplete lesion, at the discharge 1 had permanent bladder catheter, 6 intermittent catheterism and 8 normal function. Walking: of the 4 patients with complete lesion, at discharge 2 used only wheelchair for self transfer, 1 used common leg braces with walking aid (e.g. crutches) and 1 just one crutch. Of the 15 incomplete-lesions, at the discharge 10 did not need wheelchair for transfer: among them 2 used walker (1 with leg braces); 4 used walking aids (2 with leg brace); 3 used just one crutch, 1 used AFO. All patients have been treated with conventional rehabilitation strategies for enhancing lower limbs function. At the same time these patients had active exercise for upper limbs and training for daily mobility tasks (transferring, bed mobility and sitting). We have not experience with electrical stimulation but we believe that we have to consider this approach to give more chance to patients in their recovery and possibly in less time. This is a pretty opportunity to engage a long and wide road that will lead us to be partners in the Rise2-Italy Project [1-10].

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References

- [1] Biral, D., H. Kern, N. Adami, S. Boncompagni, F. Protasi, and U. Carraro. Neurological Research (2008) 30:137-144.
- [2] Boncompagni S, Kern H, Rossini K, Hofer C, Mayr W, Carraro U, Protasi F. Proc Natl Acad Sci U S A. 2007 Dec 4;104(49):19339-193344.
- [3] Graupe D, Cerrel-Bazo H, Kern H, Carraro U. Walking performance, medical outcomes and patient training in FES of denervated muscles for ambulation by thoracic-level complete paraplegics. Neurol Res 2008; 30(2): 123-130.
- [4] Kern H, Boncompagni S, Rossini K, Mayr W, Fano G, Zanin ME, Podhorska-Okolow M, Protasi F, Carraro U. Long-term denervation in humans causes degeneration of both contractile and excitation-contraction coupling apparatus, which is reversible by functional electrical stimulation (FES): a role for myofiber regeneration? J Neuropathol Exp Neurol 2004;63:919-931.
- [5] Kern H, Hofer C, Mödlin M, Forstner C, Mayr W, Richter W. Functional electrical stimulation (FES) of long-term denervated muscles in humans: Clinical observations and laboratory findings. Basic Appl Myol 2002;12:291-297.
- [6] Kern H, Hofer C, Moedlin M, Forstner C, Raschka-Hoegler D, Mayr W, Stoehr H: Denervated muscles in humans - limitations and problems of currently used functional electrical stimulation training protocols. Artif Organs 2002;26: 216-218.
- [7] Kern H, Hofer C, Modlin M, Mayr W, Vindigni V, Zampieri S, Boncompagni S, Protasi F, Carraro U. Stable muscle atrophy in long term paraplegics with complete upper motor neuron lesion from 3- to 20-year SCI. Spinal Cord (2007). ISSN: 1362-4393. 2008 Apr;46(4):293-304. Epub 2007 Oct 23.
- [8] Kern H, Hofer C, Strohhofer M, Mayr W, Richter W and Stöhr H. Standing up with denervated muscles in humans using functional electrical stimulation. Artif Organs 23(5):447-452, 1999.
- [9] Kern H, Salmons S, Mayr W, Rossini K, Carraro U. Recovery of long-term denervated human muscles induced by electrical stimulation. Muscle Nerve. 2005 Jan;31(1):98-101.
- [10] Mayr W, Hofer C, Bijak M, et al. Functional Electrical Stimulation (FES) of denervated muscles: existing and prospective technological solutions. Basic Appl Myol 2002;12:287-290.