



## Spinal Trauma in Italy: Actuality and Future Perspectives

Alessandro Landi\*, Fabrizio Gregori and Roberto Delfini

Department of Neurology and Psychiatry, division of Neurosurgery, "Sapienza" University of Rome, Italy

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### Introduction

According to the current literature, the incidence of spinal trauma with neurological impairment in Italy is estimated to be between 18 and 20 cases per million [1-3]. Usually the most affected patients are young or middle aged, with a male/female ratio of 3,5-4,1 and the trauma is related to road accidents [4-8]. Spine trauma is also related to work accidents: falls from a height in 53% of the cases, road accidents during the drive to and from work in 20% of cases. In the elderly population, the main cause is due to home accidents [4-6]. Spinal Cord Injuries (SCI) are between the main reasons of permanent disability, with a high economic and social expense; their incidence is increasing, due to the different lifestyle and the augmented life expectancy. Primary prevention could reduce the global incidence of spinal cord injuries. Secondary prevention, with a correct diagnosis and treatment in the early phase might reduce the number of negative outcomes, and improve the quality of life of the patients with SCI. A careful clinical and radiological assessment, associated with an early surgical treatment, are of main importance to improve the prognosis of the patient [9,10]. The clinical outcome of SCI patients might be improved in specialized centres, with intensive care unit and specific trauma management protocols.

### Actuality and future perspectives

According to Fehlings et al. all patients with SCI are at high risk for cardiovascular and respiratory complications [1-3]. Moreover the management of patients with acute SCI, whenever possible, in specialized centres is fundamental [8,10-12]. In Italy, patients with SCI might refer to different types of structures. The Unipolar Spinal Unit (USU) is a sanitary structure where all the specialists needed for the management of SCI are involved in the same place.

In the Bipolar Spinal Unit (BSU) the emergency phase and the post-acute phase are held in different places. The Dedicated Centres are structures compared to Spinal Units in which the rehabilitative phase is held. The USU represents, therefore, the medical centre of excellence, due to their capability of multidisciplinary management of the patient with SCI. Many specialists are involved and cooperate, such as the neurosurgeon, the neurologist, the anesthetist and the physiotherapist.

### Unipolar spinal units

As defined by the State Regions Conference for the Guidelines approval (n.l/'96, G.U. 17/3/1996) about the emergency sanitary system DPR 27/3/1992, the Unipolar Spinal Unit (USU) is a unit dedicated to the complete assistance of patients with traumatic and non traumatic SCI. Its aim is to reach the best clinical state achievable and the highest level of functional capabilities, in relation to the injury, and also the best physical and psychological condition for the re-integration into the community. The USU is located in hospitals that are II level Emergency Departments (in Italian DEA, Dipartimento Emergenza ed Accettazione). A hospital, to be a II level DEA requires some specialities such as: urology, plastic surgery, physical and rehabilitation medicine, clinical psychology, gynaecology, andrology, clinical nutrition, neurophysiopathology, pneumology, radiology with

CT and MRI. A Spinal Unit is an autonomous operative unit, and it uses the professional, instrumental and structural resources of the hospital in which are operative. With an interdisciplinary organization (departmental) attempts to overcome the clinical, therapeutic, rehabilitative, psychological and social needs of patients with SCI, in an ordinary or an outpatient regimen, to guarantee an unitary and multidisciplinary approach in both the early and the rehabilitative phase. A continuative and programmed activity is coordinated between orthopaedics, neutotraumatologists and/or neurosurgeons, anesthetists, urologists, internists, neurophysiopathologist, plastic surgeons. Their activity is integrated with specialists in physiotherapy and occupational therapy, to take charge of the patient at 360 degrees. The USU takes charge of the patient with SCI with diagnostic and therapeutic interventions during the follow-up period. Its interventions are coordinated with the territorial and regional services, to guarantee the integration of prevention, basic assistance, specialistic assistance, activities for social and work re-integration. An operative agreement with the Aziende Sanitarie Locali (ASL) and the local societies has to be guaranteed, with the aim of taking charge of people with SCI, to obtain the maximal level of protection and prevention of the tertiary damages. Tertiary damages are more common in patients referring to structure that are not capable of guarantee an adequate progression of the clinical and assistential process. At the current state, as the USU in Italy are scarcely represented, the realities already developed in the territory have to be used at their best, to guarantee a coordinated and integrated management of all the needs of patients with SCI, from the pathological event to the higher grade of physical recovery and functional state. In our country has not been yet developed a national registry for SCI, and heterogeneous data are collected on the territory. An absence of a real coordination between acute intensive cares, rehabilitation and social re-insertion can be noticed. At the present time in Italy only 17 USU are active, with a inhomogeneous distribution on the national territory, with the 95% of the USU active in the northern part of Italy. A few examples are represented by: Veneto (Vicenza Hospital); Lombardy (Morelli di Sondalo Hospital and Niguarda Hospital, Milan); Umbria (Silvestrini Hospital, Perugia); Lazio (Alesini Hospital, Rome); Tuscany (Careggi Hospital, Florence); Sardinia (Marino Hospital, Cagliari); Liguria (Santa Corona di Pietraligure Hospital), Piedmont (is imminent the opening of a USU in the C.T.O. Hospital in Turin). The bed places reserved (USU, Spinal Units and Rehabilitation Centres) are 752, and the yearly incidence of SCI is 1531. The management of those hospitals is mainly public (86%), while the rehabilitative centres are mostly private (60%).

**\*Corresponding author:** Alessandro Landi MD PhD, Dpt of Neurology and Psychiatry, division of Neurosurgery, "Sapienza" University of Rome, Viale del Policlinico 155, Rome 00181, Italy; Tel: + 39 06 49979105; E-mail: [dott.alessandro.land@gmail.com](mailto:dott.alessandro.land@gmail.com)

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The Ospedale del Mare in Naples, will be an important landmark in the southern part of Italy for the multidisciplinary treatment of patients with SCI. Considering all the above mentioned factors, a higher and more homogeneous presence of BSU and of dedicated centres can allow the implementation of the potentialities of each treatment performed for patients with SCI in the whole Italian territory.

### Bipolar spinal units

The emergency treatments, such as the clinical and radiological assessment, and the surgery are performed in a centre. After the first phase is completed, and a clinical stability is reached, the patient moves in a second centre in which he will be facing the rehabilitative process, until he is discharged. The medical staff who performed the surgery and the medical staff of the rehabilitative structure are in contact for every complication or need related to the surgical procedure and the follow-up. Those units work synergically to improve the outcome of patients with SIC. However, despite the efforts, there might be some difficulties related to the fact that the two parts of the multidisciplinary treatment are held in two different places.

### Conclusions

The multidisciplinary approach to the patient with SCI is key for the treatment of a pathology with many social implications. The development of USU is the instrument with the best guarantee for a continuative and specific treatment that patients with SCI need to obtain the best neurological recovery and improve their quality of life. The continuative assistance in structures where a diagnostic, therapeutic and rehabilitative assistance is available, seems to be the best choice for a 360 degrees treatment of patients with SCI and to obtain a reduction in the social and economic impact of this kind of pathologies, with benefits for the patients and for the community.

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