Acute and rehabilitative phases in severe brain injury and spinal cord injury patients: an integrated pathway model

P. MAMMI, B. ZACCARIA, M. SACCA VINI

Introduction

We are going to present a pathway for patients with severe brain injury and spinal cord injury that relies on the integration among different departments in our Hospital: Intensive Care (ICU), Neurosurgery and Rehabilitation. This project is based on the well known importance of an early and correct rehabilitative approach for both these pathologies and has the aim to realize rehabilitative take in charge at admission in ICU or Neurosurgery and providing an early transfer to Rehabilitation Facilities to promote patient recovery and a proper use of Hospital resources. The pathway model is completed by the possibility of an early psychological approach for families and patients, given the importance of offering support and improving the relationship with healthcare staff.

Materials and methods

The model has been developed by our Rehabilitation Medicine Unit, discussed and approved together with the ICU and Neurosurgery and it’s based on a strict collaboration among these three structures. It is applied to patients with acquired brain injuries and therefore to patients who are included in the Region Emilia Romagna GRACER Project. This is a project that defines specific modalities of patients evaluation, indicates correct pathways from the acute to the post-acute phase involving specific rehabilitation Centres (Hub and Spoke network) for individuals who have the following characteristics: acquired brain injury not degenerative nor neoplastic, coma >12 hours, residence (or injury happened) in Emilia Romagna. Our pathway model also includes patients with spinal cord injuries. Even if there’s not such a detailed and structured project as “GRACER”, Region Emilia Romagna defines specific rehabilitation Centres in the area for the spinal cord injured rehabilitation phase.

The pathway comprehends three different phases: acute, rehabilitative and post acute.

1) Acute phase

- Presence of a Physiatrist 3 times a week in ICU and Neurosurgery to formally register, evaluate and control all the patients that can be enrolled within 72 hours from admittance. Information are shared with two Therapists dedicated to these patients, coordinated by Physiatrist, who provide motor and respiratory rehabilitation treatment and fill individual rehabilitation diary that follows patients during Hospital stay.

- Since January 2008 Physiatrist includes clinical consultations in synergy with Neurosurgeons in the Traumatological Neurosurgery Ward

2) Rehabilitative phase

- Early admission of patients in our Intensive Rehabilitation ward and possibility of temporary stay for patients who will go to other Rehabilitation Structures in order to reduce improper stay in acute departments.

- Interdisciplinary equip coordinated by Physiatrist who follows patients during inpatient and Day Hospital stay, including physiotherapists, Occupational therapists, Speech therapists, Nurses, Psychologists and Social assistants

- Individual and formalized rehabilitation projects developed together with patients and families.

- Collaboration and integration with territory resources

3) Post acute phase

- Brain injury patient follow up through by a specific outpatient Service in our Unit

- Possibility to accept patient re-entry in Inpatient or Day Hospital stay for specific problems (evaluation /re-evaluation of devices as Baclofen intrathecal pump, tracheostomy…)

Results

The pathway model has been applied and data regarding year 2007 are the following:

- Early transfer to rehabilitation Structures inside and outside our hospital with specific and formalized forms managed by Physiatrist

- Possibility to offer an early Psychological approach to families or patients in during the acute phase through group meeting in ICU (for families) or individual approach (for patients): This preliminary contact can be developed throughout the following rehabilitation phase and it’s aimed to offer support and reduce communication bias between families and staff.

- Rehabilitation phase

- Early admission of patients in our Intensive Rehabilitation ward and possibility of temporary stay for patients who will go to other Rehabilitation Structures in order to reduce improper stay in acute departments.

- Interdisciplinary equip coordinated by Physiatrist who follows patients during inpatient and Day Hospital stay, including physiotherapists, Occupational therapists, Speech therapists, Nurses, Psychologists and Social assistants)

- Individual and formalized rehabilitation projects developed together with patients and families.

- Collaboration and integration with territory resources
were 29. Considering patients with TBI in ICU, 6 of them were transferred to other ICU (nearer to city of residence), 14 were transferred to our Intensive Rehabilitation ward, 3 to other Rehabilitation Structure, 3 to long-term facilities, 5 were directly transferred home and 5 died during the acute phase. Interval between ICU or Neurosurgery admission and Rehabilitation transfer was: mean 28.7 days and median 18.5 days.

In 2007 our Rehabilitation ward accepted 26 patients with severe brain injury or vertebral trauma: 5 SCI, 14 TBI and 7 other brain injury. Among this sample: 79.3% of them (23 patients) was then transferred home and 3 completed their rehabilitation pathway in other structures.

Our Psychologist approached 35 individuals in ICU and Neurosurgery: patients or relative/spouse; psychological counselling was then prosecuted in our Rehabilitation ward for patients and families who were transferred there; for patients transferred to other Rehabilitation structure a brief report was written and included in Medical Reports.

**Conclusions**

The pathway based on the integration between the resources of Rehabilitation and Intensive Care Department has proven to be realizable and has been applied to almost all the patient with major trauma or other severe brain lesion entered in our Hospital.

The strict collaboration among these Departments then permitted: an early rehabilitative approach to patients beginning in the acute phase and a correct use of the Hospital resources with early transfer to rehabilitation structures or long term facilities. This was a focal endpoint of the project because of the importance of an early rehabilitation approach for outcome improvement as emerging in recent literature. It was also necessary for a correct use of human and economic resources, limiting unnecessary stay in Acute Departments. The pathway has been easily integrated with region Emilia Romagna GRACER project, improving information exchange between different Departments and Rehabilitation Structures.

Starting a psychological approach to families and patients at the beginning of the recovery pathway, in ICU and Neurosurgery, has proven to be possible and this part of the project will be further developed to improve communication and relationship between patients, families and healthcare professionals.

Despite these encouraging results the pathway model has revealed some “critical points”: the delay between patient transfer request and effective transfer from Hospital to other Structures is still not homogeneous among different Centres and in some cases it’s still excessive, leading to improper use of resources and discomfort for families and patients. It will be necessary to work for a better integration with territory Structures.

Still, the psychological approach in the ICU or Neurosurgery has not been accepted by all the families and patients contacted, at least at the beginning: it will be important to improve this part of the project to enhance compliance of the people involved. These “critical” points represent the direction of further work in the next phase of the pathway model development.

**References**