Interdisciplinary inpatient rehabilitation of acquired brain injury — Part II — a proposed model of care for Pakistan

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Abstract

Rehabilitation of acquired brain injury (ABI) is a complex and costly intervention in which the comprehensive rehabilitation services should be integrated with neurosciences units to provide best possible opportunities of recovery to the patients. Keeping in view the diversity and chronicity of impairments, the follow up needs to be well planned in terms of duration and patient convenience. These types of services need to be run by the government and funded by government, with parallel efforts to make national guidelines and registry to keep a track of patients suffering from ABI.

In Pakistan, the burden of people with ABI is increasing. This can be attributed to the acts of terrorism and bomb blasts, rapid urbanization and increase in number of motor vehicles resulting in increased frequency of roadside accidents, lack of adequate medical and evacuation services and the absence of hyper acute neurosurgical units. We have proposed an ABI rehabilitation plan considering the local health care system, socio-cultural context and resources. The proposed ABI rehabilitation pathway will not only improve the clinical care and continued support delivered by health services to adults with ABI but will also facilitate community reintegration and support their families and care givers.

Keywords: Brain injury, Rehabilitation, Clinical pathway, Community reintegration.

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Introduction

We have already described different impairments associated with ABI and the role of rehabilitation team members earlier.[1] A proposed interdisciplinary inpatient rehabilitation pathway relevant to the needs of the country is presented in this Part-II. Pakistan like many other developing countries is facing the problem of a huge population with an inadequate number of skilled and trained neuro-rehabilitation specialists.[2] There are very few departments of rehabilitation medicine in the country having a population of more than 220 million people.[3] The available services are at present only in the major cities and most of them do have all the components of a standard multidisciplinary neurorehabilitation team. It results in delayed or no referrals which ultimately leads to many preventable complications (chronic pain, spasticity and contractures) , reduced mobility and a poor quality of life

In the absence of a national data of ABI burden and resulting disability, it becomes difficult to assess and recommend the needs of interdisciplinary rehabilitation programme for patients with ABI. At present, there are no national registries for neurological disorders in the country including stroke and brain injury, and sparse data is available from some hospital based studies conducted in major cities having a good medical setup.[4]

Acute trauma care is improving in Pakistan and new trauma centers are being established in different cities. However, the focus is only on acute trauma care with no integration of rehabilitation services. It is very important to screen cases of concussion for mild TBI and to refer the patients with moderate to severe TBI to an interdisciplinary rehabilitation team.[5] Considering the burden of neuro trauma care in the country, this is high time for close collaboration of neuro-trauma/ neurosurgery teams and brain injury rehabilitation services led by experts trained in neuro-rehabilitation.[6] The rehabilitation medicine consultant ideally should be the integral part of the neurosurgical team, who can support the critical care and neurosurgical colleagues with difficult clinical situations and support the families during the acute phase of management of ABI.

The transition from hyper acute to acute care and then post-acute care of ABI patients require close monitoring and the social services should be involved at the very early stage to look after the needs of the individuals and families once discharged.

Hyperacute and acute rehabilitation

In the early stages of severe brain injury, patients may be

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acutely unwell or in a prolonged disorder of consciousness. It has been documented that early rehabilitation is associated with better outcomes in moderate to severe head injury and intensive specialist rehabilitation programmes have shown to be not only effective, but cost effective.[7,8]

Therefore, impairment-based assessment and rehabilitation begins with an early focus on cognitive rehabilitation and prevention of secondary complications.[6] The management of respiratory function and tracheostomy, swallowing impairment and maintenance of adequate nutrition is of prime importance. In addition, proper positioning (to avoid the development of contractures, pressure injuries and aspiration), effective bladder and bowel management, establishing basic communication, management of seizures, pain, headaches, autonomic storming, balance problems and challenging behaviours are essential elements in the early stages.[8]

Interdisciplinary rehabilitation

In the post-acute phase, specialized interdisciplinary rehabilitation treatment programmes are needed not only to address the medical, rehabilitation, social, vocational and educational needs of people with acquired brain injury but to carry out assessments to determine the trajectory of recovery.[8]

The aim is to facilitate recovery by preventing long term complications, promoting neuroplasticity and implementing compensatory strategies/ interventions to maximize functioning and improving quality of life.[9] In addition to the traditional rehabilitation techniques like pharmacotherapy and use of exoskeletons and compensatory aids; the newer approaches which include neuromodulation using transcranial magnetic stimulation or direct current stimulation can be implemented.[10] The patients should be transferred to an inpatient rehabilitation programme as soon as possible to receive appropriately intense therapy for specific duration and be given as much opportunity as possible to practice skills outside formal therapy sessions.

Projected ABI Rehabilitation Pathway

Goal-orientated ABI rehabilitation programmes are widely accepted as a means of demonstrating progress and reducing caregiver burden. In Pakistan, there is a need to establish Neuroscience Centers involving all domains of neurosciences such as; neurology, neurosurgery and neuropathology under one roof along with a dedicated rehabilitation unit, headed by a rehabilitation medicine physician. He/She should be supported with a multidisciplinary rehabilitation team, which should be the integral part of every neuroscience center.

Once the rehabilitation team is involved, the team members can complement each other's expertise and provide long term rehabilitation care before and after discharge. Follow up in outpatient department and specialist clinics is mandatory to continuously monitor the patients and improve their quality of life.

There is a need to establish a well-organized, publicly funded and consultant-led specialist service, in major teaching hospitals co-located within the regional neuroscience centres to provide basic rehabilitation facilities and life-long social and psychological support for acquired brain injury population.

A recommended plan is suggested in the Figure.

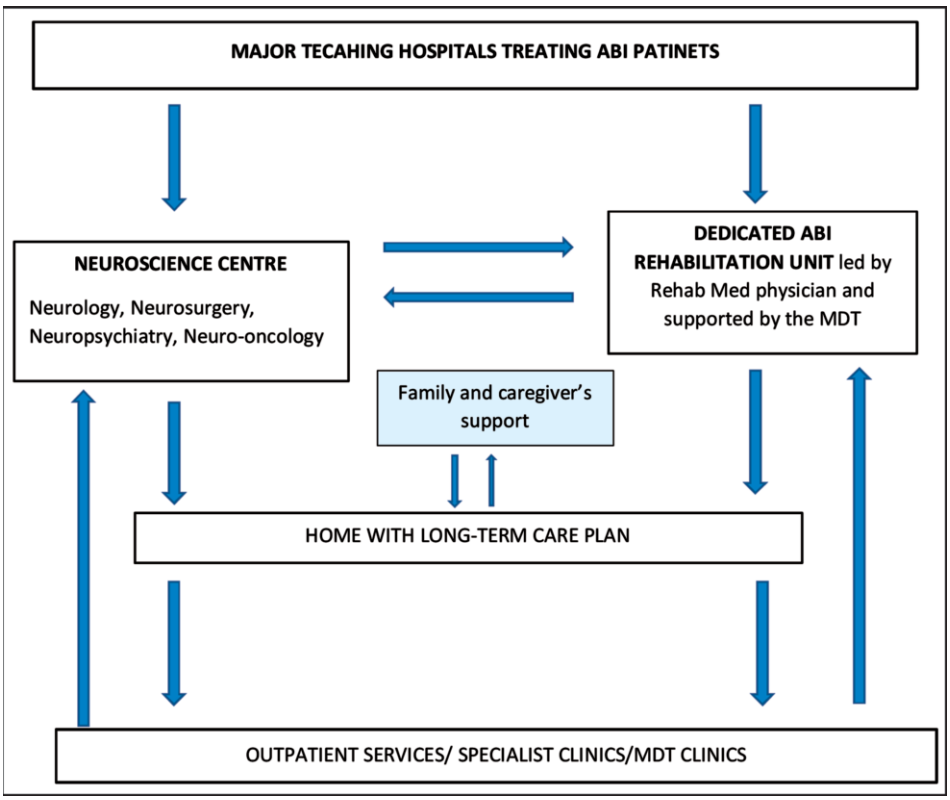

Figure: Projected ABI rehabilitation pathway.

Home with long-term care plan

To maximize new learning and relearning of old skills, evidence suggests that activities should be practiced in a natural and realistic environment, ideally at home. The provision of any equipment and adaptations that are required should be ensured before the discharge and the family should be trained in using equipment and taking care of patient safety.[8]

Outpatient services/specialist clinics/MDT clinics

The patients can be followed up in the outpatient department or the treating specialist clinic of the tertiary care facility, as the community rehabilitation system is not formally setup in our country. The patients should be given detailed discharge planning and instructions mentioning the pathological diagnosis, surgical intervention/treatment given in the hospital, all relevant investigations, functional status of the patient and the follow up planning. A similar document guideline has been implemented by the Major Trauma Networks in the UK. This document is called Rehabilitation Prescription which highlights the entire journey of the patient including rehabilitation through the Major Trauma Centre.[11] This should also include the details of services to contact if any problem emerges. The useful resources should be shared with the patient and family to get financial help like zakat funds of hospitals, NGOs providing mobility aids or orthotic devices free of cost and Pakistan Bait-ul-Maal etc.

Family and caregiver support system

There are several charitable organizations in the Western World which support the patients and their families after a head injury. These organizations are also instrumental in shaping the government healthcare policy to provide services for the head injury patients. In the United Kingdom "Headway UK"[12] provided support to the patients and families nationwide. The family and caregiver support in Pakistan is a blessing in disguise for persons with disability, which is generally lacking in most of the developed countries. There is a need to emphasize the education and training of caregivers and ensure their participation in the overall long-term care of the patient. Rehabilitation programmes should be developed in collaboration with family and caregivers to ensure that the programme is carried over into daily activities. Information, counselling, emotional and psychological support can reduce the psycho-emotional sequelae experienced by the family.

The rehabilitation medicine as a specialty is struggling to get the recognition and to get timely involvement along the course of treatment in patients with neurological diseases in Pakistan. However recently the closer liaison among the neurology and rehabilitation medicine physicians has led to their involvement where both specialties are available in proximity.[13] But the overall milieu is not going to change unless the initiative involves the public health sector and policy makers of the country.

Conclusion

The long term neuropsychological and physical impairments resulting from ABI are best addressed by a multidisciplinary rehabilitation team instead of focusing only on exercise and physiotherapy. These services are lacking in developing countries like Pakistan. There is a need for establishing dedicated neurorehabilitation units affiliated with acute neurosciences departments in order to improve the functional outcomes in these patients.

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