

Chronic stroke: an oxymoron or a challenge for rehabilitation?

Stroke is widely recognized to be the second cause of mortality worldwide. Given this dramatic statistic, it is hardly surprising that most attention is currently focused on efforts to improve acute care of the disease, and indeed recent years have seen a significant reduction in mortality. In the United States, for example, the relative rate of stroke-related mortality dropped by 35.8% between 2000 and 2010 (Mozaffarian et al., 2015; Powers et al., 2018).

But the flip side of these improvements in acute stroke care, which are certainly to be welcomed, is that stroke continues to be a major cause of longer-term disability. In fact, even though stroke is generally considered, and managed, as a transient condition, it leaves most stroke survivors with persistent, critical limitations in activities of daily living (ADL).

It has been estimated that 33 to 42% of stroke survivors still require assistance with ADL between 3 and 6 months after stroke, and 36% of these patients still report a disability after 5 years (Teasell et al., 2014). Moreover, although 50% of stroke survivors report unmet needs such as incontinence, emotional problems, mobility issues, pain and speaking problems, most of them do not receive rehabilitation follow-up or any additional therapeutic intervention (Murray et al., 2003).

For patients and their caregivers, therefore, stroke is a devastating event, whose long-term impact is known but still poorly understood (Teasell et al., 2012).

We all know that recovery is complex, probably involving a combination of spontaneous and learning-dependent processes as well as adaptive behaviors. Current evidence suggests that several mechanisms are involved, serving, for example, to restore the functionality of damaged neural tissue (i.e. restitution), reorganize spared neural pathways (i.e. substitution), and correct the disparity between impaired skills and the demands of ADL (i.e. compensation) (Kwakkel et al., 2004).

In consideration of these aspects, there is growing evidence that interdisciplinary rehabilitation treatment improves the outcomes of stroke survivors when applied in the acute and subacute phases after the event, during which more than two thirds of stroke survivors have been found to be involved in rehabilitation pathways (Buntin et al., 2010).

However, it should be noted that “formal” post-stroke motor rehabilitation ends usually 3-4 months after the event (Winstein et al., 2016), a practice greatly influenced by the observation that motor and functional recovery typically reach a sort of plateau 3-6 months after stroke onset (Langhorne et al., 2011).

However, the “motor plateau” concept has recently been questioned. Page et al. argued that one of the factors contributing to the plateau is neuromuscular adaptation to exercise regimens, and on this basis suggested that novel exercise approaches might be considered, in order to further facilitate recovery and overcome the adaptive state (Page et al., 2004). In addition, it should also be considered that central nervous system diseases, such as stroke, have been associated with diverse and specific patterns of muscle loss and muscle changes, due to denervation, disuse atrophy, spasticity and myosteatosis (Carda et al., 2013).

Current evidence supports the hypothesis that cognitive function, language and motor skills can improve at any time after stroke (Dobkin, 2005). In addition, long-term unmet needs are observed across many domains, including social reintegration, health-related quality of life, maintenance of activity, and self-efficacy (Winstein et al., 2016). Accordingly, stroke should be considered and treated as a chronic disease (Briggs and O’Neill, 2016), and rehabilitation processes should be designed taking these aspects into account.

However, even though they are potentially susceptible to rehabilitation interventions, long-term post-stroke concerns often remain unrecognized and untreated.

Identification of patients who could benefit from rehabilitation is a critical medical challenge, as is tailoring of rehabilitation programs to single patients. In fact, some interventions are suitable for the majority of stroke survivors (e.g. strength training), whereas other therapies might be more indicated for specific subpopulations. Long-term care of stroke survivors should consider all these aspects.

Although there is strong evidence supporting the value of physical therapy interventions based on intensive, highly repetitive, task-oriented and task-specific training in all phases post-stroke (Veerbek et al., 2014), chronic stroke survivors, in particular, require rehabilitation programs that are also tailored to their specific needs.

Moreover, several national guidelines suggest that follow-up programs might help health care providers to identify long-term problems of stroke survivors, thereby improving their referral for appropriate management.

A few years ago, a specific tool was proposed, designed to facilitate a standardized approach to 11 long-term problem areas: secondary prevention, ADL, mobility, spasticity, pain, incontinence, communication, mood, cognition, life after stroke, and relationship with caregiver (Philp et al., 2013). Recently, an online version of this tool was tested as part of efforts to make it more accessible (Iosa et al., 2018). Interestingly, the instrument highlighted problems related to mood (in 50% of the sample), mobility (53.1%), spasticity (42.2%), and pain (37.5%); both patients and clinicians provided good feedback about the usefulness of the online questionnaire.

However, despite the increasing evidence on these topics, audits focusing on stroke care have highlighted a critical absence of chronic disease management (Hickey et al., 2012).

In our opinion, the paradigm of stroke care must be revised, with the aim of pursuing a balance between all the phases after the event, and thus focusing on chronic as well as acute and post-acute treatment.

As previously stated, rehabilitation could improve the functional outcome of stroke survivors in the post-acute phase, but its role in chronic phase needs to be reconsidered. As suggested by Teasell et al. (2014), these patients should be managed according to whether they are in the “brain attack” or the “injured brain” phase, and greater emphasis should be placed on the latter.

In conclusion, in view of the available literature, the time has come to review and revise the way in which rehabilitation is provided to chronic stroke patients.

Current research suggests that rehabilitation should reflect a long-term, maybe even lifelong, process of learning and, as stated by Korner-Bitensky (2013), we should focus on the need to “reposition the management of stroke to recognize the need for sophisticated chronic disease management”.

Evaluations of hospitalization episodes would actually measure the real efficiency of patient care.

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