

# Brazilian neurointensive care: a brief history

João Roberto Sala Domingues<sup>1</sup>, Edward Manno<sup>2</sup>

Instituto de Ensino e Pesquisa of Hospital Sírio-Libanês, São Paulo, SP, Brazil.  
Cleveland Clinic, Cleveland, Ohio, United States of America.

## ABSTRACT

*Neurointensive care arose from the specific growth of the various therapeutic methods in neuroscience, similar to the formation of specific units in other specialties. The progress of the neurological intensive treatment is more recent and because of the high frequency of pathologies in this area it became necessary to structure this specialty in terms of theoretical and physical aspects. In this text, a commentary on the chronology of this development is set out briefly and objectively.*

## KEY-WORDS

*Neurointensive care, emergency neurology, neurosurgical intensive care, neuroanesthesiology.*

## RESUMO

### **Terapia intensiva neurológica no Brasil: uma análise histórica**

*O neurointensivismo surgiu a partir do crescimento específico das diversas formas terapêuticas em neurociências, à semelhança da formação de unidades específicas em outras especialidades. O progresso do tratamento neurológico intensivo é mais recente e, em virtude da alta frequência das patologias nessa área, tornou-se necessária a estruturação dessa especialidade do ponto de vista teórico e físico. Neste texto, um comentário à cronologia desse desenvolvimento é exposto de maneira breve e objetiva.*

## PALAVRAS-CHAVE

*Neurointensivismo, neuroemergência, terapia intensiva neurocirúrgica, neuroanestesia.*

## Introduction

In the first half of the 20th century, poliomyelitis lead neurologists to work with mechanical ventilation in a large scale. With the so called “iron lungs”, tracheal intubation with positive pressure ventilation and the placement of these patients in a common location, not surprisingly, showed better results than when scattered in the hospital.<sup>2</sup> This realization lead to the concept of centralizing patients according to common illnesses.

An important interest arose when Dr. Allan Ropper founded the service of neurological and neurosurgical intensive care at Massachusetts General Hospital in the late 1970's. This was followed by other creators, as Dr. Daniel Hanley from Johns Hopkins Hospital, Dr. Matthew Fink from Columbia University and Dr. Thomas Bleck from University of Virginia.<sup>4</sup>

Recent data have shown that in neurological intensive care units, length of stay of these patients is lower due to better optimization of treatment, and improved recovery. As a result, the number of neurological intensive care units has grown rapidly, as well as training and updating courses to this specialty, including in Brazil.

## The development in Brazil

Our country has been a pioneer in the world to develop the neurological intensive care as a medical specialty. During the administration of Prof. José Zaclis, of the Medicine School of the Universidade de São Paulo, in 1973, he asked to the newly physician

1. Instituto de Ensino e Pesquisa of Hospital Sírio-Libanês, São Paulo, SP, Brazil.  
2. Cleveland Clinic, Cleveland, Ohio, United States of America.

Dr. Manoel Jacobsen Teixeira to develop an specialized intensive care unit to treat patients with neurosurgical conditions, which would be equipped with respirators and other devices to monitor vital parameters and intracranial pressure, along with the application of Jouvett and Glasgow scales; this last one in the structuring phase centers in Europe. In addition to neurosurgical care to patients, models were developed for research on sensors for measurement of intracranial pressure, hypertonic solutions (glycerol), new corticosteroids in pre-launch in multicenter studies, the processes of administration of antibiotics in the cerebrospinal fluid compartment, the washout brain with continuous ventricular drainage and others.

In 1977, sponsored by the Neurology Department of the Medicine School of the Universidade de São Paulo, the first course of traumatic brain injury was created, in which topics such as mechanical trauma, vascular, inflammatory, degenerative and metabolic brain were presented with the critical vision of notable professionals in the areas of experimental and applied sciences related to the theme.

This interest was first recorded in the book *Urgências em Neurocirurgia – Traumatismos Cranioencefálicos*,<sup>1</sup> edited by professors Gilberto Guimarães Machado de Almeida and Oswaldo Ricciardi Cruz in 1980. In this book was the first systematic review performed by the teachers Almir Ferreira de Andrade and Manoel Jacobsen Teixeira. This chapter resulted in the first class of neuro-intensive care in our country, in the *Intensive Care Journey* of the Medical School of the Pontifícia Universidade Católica de São Paulo, by the 4<sup>th</sup> year student Marcos Stavale, with this class as the opening lecture of this journey. At this same year, a customized neurological ICU was created, managed at the beginning by the professors Luis Alcides Manreza and Almir Ferreira de Andrade, and the chairman Gilberto Guimarães Machado de Almeida.

In the 1990 and after 2000, many courses helped to promote the neurological intensive care as a specialty and improve care for serious neurological patients. These classes were taught in São João Del Rei, Minas Gerais, and organized by professor Jorge Paranhos, who become later one of the driving forces of the evolution of the specialty in the country.

In 1996, the first edition of the *Bases da Terapia Intensiva Neurológica*,<sup>8</sup> by professor Stavale, influenced largely by the neuro-anesthetist professor Nelson Mizumoto. At the same time, researchers working in the area began to include chapters about neuro-intensive care in their books; for example, the chapter about shock from neurological origin, of professor Mauricio Rocha.<sup>7</sup>

In 2002, Elias Knobel, along with Antonio Capone Neto, Ana Claudia Ferraz and Fábio Santana Machado,

launched the edition of the *Neurologia from the Intensive Care collection*.<sup>3</sup> Following the growth of the specialty of the Escola Paulista de Medicina, the professor Julio Cruz published the book *Neurointensivismo*<sup>6</sup> in 2002. Professor Cruz later published a spectacular book in 2005 entitled *Neuroemergências*,<sup>5</sup> which brought together a complete view of the state of scientific expertise in our time.

With great enthusiasm was created a group of neurological intensive care at the Hospital Israelita Albert Einstein, supervised by professor Elias Knobel. At this time a major figure in the Neuro-Intensive Care was professor Fabio Santana Machado, who later, together with professor Stavale, founded the Postgraduate Program Lato Sense and level of expertise with practical training and theoretical large load the Institute for Teaching and Research of the Sírío-Libanês Hospital in São Paulo, in 2007. In that same year a group headed by the distinguished professor Álvaro Rea-Neto, created a large postgraduate course which sought to bring together professionals from the entire country, and finally consolidate the specialty. At this stage, workshops were being developed on Neuro-Intensive Care, such as those conducted at Albert Einstein Hospital and the Brazilian Association of Critical Care Medicine, Curso de Terapia Intensiva Neurológica (TIN) and Curso de Imersão em Terapia Intensiva Neurológica (CITIN), respectively.

In 2008, the group of intensive care at Unicamp, led by professor Renato Terzi, launches a spectacular book with his clinical assistant professor Eiras Falcão.<sup>9</sup> This work had great impact on this specialty in Brazil. In October of that year, the first congress of the Neuro-Intensive Care was held in Brazil, having been president the intensivist Antonio Capone Neto. The Second Congress was held in Recife in 2010, supervised by professor Hildo Cirne Azevedo.

In 2010, publication was sent as an expanded reprint of the book *Bases da Terapia Intensiva Neurológica*,<sup>9</sup> as editor professor Stavale, and in the same year was also sent for publication the book *Hemodinâmicas Intracranianas*. This was already a complete view of the intracranial compartment under hemodynamics and not as focused on the biochemical point of view related to brain tissue edema. There was a shift in importance towards the conceptual aspects of cerebral vasodilatation in response to attacks in the central nervous system.

Development of specific neurological intensive care units followed, including: the Emergency Room of the hospital of the Universidade de São Paulo followed by the Escola Paulista de Medicina. Then a big Neuro-Intensive Care Unit was organized at the Beneficência Portuguesa Hospital of São Paulo by the same group at Santa Catarina Hospital. Specific units were also established with related groups in the Sírío-Libanês and Albert



Figure 1

Einstein hospitals. Recently a very complete unit was established in the Santa Paula Hospital of São Paulo, in 2009, managed by the neurologist Renata Simm.

This brief summary reports some works that may have been interesting in these last decades in our country, showing the effort and enthusiasm of many professionals in the growth of the specialty. Currently Brazil is the second highest involved country with Neurocritical Care Society, with 33 members total. Certainly many courses, conferences, classes, and especially people, could not be cited here by the brevity of the text, all participating with equal importance, and to whom the specialty is extremely grateful.

## References

1. Almeida GGM, Cruz O. Urgências em neurocirurgia: traumatismos craneoencefálicos. São Paulo: Sarvier; 1980. p. 270.

2. Bleck TA. Historical aspects of critical care and the nervous system. Crit Care Clin. 2009;25(1):153-64.
3. Capone Neto A, Ferraz AC, Machado FS. Terapia intensiva: neurologia/Elias Knobel. São Paulo: Atheneu; 2003. p. 346.
4. Chase CM, Ulatowski JA. Organization of a neuroscience critical care unit: historical perspectives and vision for the future. In: Suarez J, editor. Critical care neurology and neurosurgery. Hotowa, NJ: Human Press; 2006. p. 9-21.
5. Cruz J. Neuroemergências. Rio de Janeiro: Atheneu; 2005.
6. Cruz J. Neurointensivismo. CBMI Série clínicas brasileiras de medicina intensiva. São Paulo: Atheneu; 2002.
7. Rocha e Silva M. Choque. In: CBMI Série clínicas brasileiras de medicina intensiva. São Paulo: Atheneu; 1996.
8. Stavale MA. Bases da terapia intensiva neurológica. São Paulo: Santos Livraria Editora; 1996.
9. Terzi R, Ridetta W, Falcão A. Manejo neurointensivo. Rio de Janeiro: Atheneu; 2008.

### Correspondence address

João Roberto Sala Domingues  
Rua José de Magalhães, 176, Vila Clementino  
04026-090 – São Paulo, SP, Brazil