

INTRODUCTION

Adult hydrocephalus

Mark Hamilton, MD, CM, FRCSC,¹ John Peter Gruen, MD,² and Mark G. Luciano, MD, PhD³

¹Department of Clinical Neurosciences, University of Calgary, Alberta, Canada; ²Department of Neurosurgery, Los Angeles County/University of Southern California Medical Center, Los Angeles, California; and ³Department of Neurosurgery, Johns Hopkins University, Baltimore, Maryland

THE first issue of *Neurosurgical Focus* dedicated to the topic of adult hydrocephalus was published more than 9 years ago, in April 2007. Much has happened in the past 9 years to improve our understanding regarding epidemiology, pathophysiology, and treatment outcomes for this disorder. Adult hydrocephalus is often thought of as a homogeneous disorder, but in fact represents a very diverse grouping of patients with different etiologies, pathophysiology, diagnostic criteria, and treatment needs. These patients' ages span from the late teens through geriatric years, and recent epidemiology studies suggest that adult hydrocephalus is more common than pediatric hydrocephalus.²

The distinction between what is called obstructive versus communicating hydrocephalus is often the simplest classification scheme and is by far the most limiting if one is attempting to more clearly understand the pathophysiology of hydrocephalus. A well-developed anatomical classification system is required to accomplish this task.³ However, in day-to-day clinical work, a pragmatic clinical organizational scheme can be helpful to ensure we are all talking about the same types of patients within the diverse group of individuals with adult hydrocephalus: 1) transitional patients (previously diagnosed with hydrocephalus or treated for it as children); 2) adults identified with chronic-congenital hydrocephalus (also called arrested hydrocephalus, chronic hydrocephalus, syndrome of hydrocephalus in young and middle-aged adults [SHYMA], or longstanding overt ventriculomegaly in adults [LOVA]); 3) adults with acquired hydrocephalus with an identifiable etiology (e.g., subarachnoid hemorrhage, cerebral trauma, or infection); and 4) patients with suspected or proven idiopathic normal pressure hydrocephalus (iNPH).¹ The development of a comprehensive standardized taxonomy and nomenclature should be an important objective for future adult hydrocephalus research, and the use of a simple clinically relevant organizational system is essential to start this process. Standardized taxonomy will allow clearer communication and the opportunity to reach a better understanding of the adult hydrocephalus patient population, and it will help us

improve the use of diagnostic modalities (e.g., MRI, neuropsychological evaluation, and CSF removal strategies) and treatment approaches (current and future).

This issue of *Neurosurgical Focus* provides a generous overview of these important topics. The papers accepted for this issue explore basic pathophysiology and examine potential future nonsurgical treatment options (aquaporins). Two manuscripts explore epidemiological issues, including a revisit of the concept of "secondary normal pressure hydrocephalus." Two papers discuss advances in image assessment for patients with suspected iNPH. For shunt treatment, the issue of delay in treatment, technical issues and changes for shunt insertion (image guidance, laparoscopy, flushing reservoir), the clinical and pathophysiological issues associated with shunt overdrainage, and the risk issues that occur when patients are using low-dose acetylsalicylic acid (ASA) are explored. Finally, 2 manuscripts study technical improvements for endoscopic treatment and the long-term outcomes associated with endoscopic third ventriculostomy (ETV) care of adult patients with hydrocephalus.

We hope that you find that this issue of *Neurosurgical Focus* is informative. We are gratified by the advances that have occurred in the field of adult hydrocephalus care, and we all look forward to the significant developments that can be reported in the next issue devoted to this topic.

<http://thejns.org/doi/abs/10.3171/2016.6.FOCUS16272>

References

1. Hamilton MG: Treatment of hydrocephalus in adults. *Semin Pediatr Neurol* 16:34–41, 2009
2. Jaraj D, Rabiei K, Marlow T, Jensen C, Skoog I, Wikkelsø C: Prevalence of idiopathic normal-pressure hydrocephalus. *Neurology* 82:1449–1454, 2014
3. Reigate HL: A contemporary definition and classification of hydrocephalus. *Semin Pediatr Neurol* 16:9–15, 2009

Disclosures

Dr. Hamilton is a consultant for the following companies: Medtronic Canada, Codman Canada, and Codman USA.