



Neurogenic bladder: current and future treatment strategies

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Over the past two decades, there have been major advances in the understanding of the anatomy, physiology and pathophysiology of the bladder and neurologically impaired bladder. These advances stem from a dedication to basic science and clinical research investigation of these realms of science. What has been learnt from this vast amount of study is the application of new surgical techniques and medical interventions to assist both adults and children in maintaining normal bladder and urinary sphincter function and urinary continence. Some of these surgical techniques are minimally invasive, while others require more invasive modalities.

This normality among adults and children has significant implications in maintaining social equality and prevention of psychological ramifications. Urinary incontinence can be a socially embarrassing situation. For adults, concerns include the fear of having an episode of incontinence during routine social interactions, such as sitting with a friend over a cup of tea, shopping in a store full of strangers or having a formal dinner. However, for children, the social and psychological effects may be even greater.

The purpose of this issue is to present the current understanding of the anatomy and physiology of bladder and urinary continence, the pathophysiology of urinary incontinence and the advances in the medical and surgical treatments of incontinence. The articles include the anatomy of the neurogenic bladder [1], prophylactic antibiotic therapy [2], surgical and nonsurgical treatment options [3] and botulinum toxin therapy [4]. In addition, there is a fascinating article on regenerative medicine for the neurogenic bladder [5].

The understanding of the anatomy of the normal and neurogenic bladder is essential in order to appreciate the treatment options available and the research currently being conducted in the future care of patients. For this reason, an

article on anatomy and physiology is included in this issue on the neurogenic bladder to help the reader understand this essential component for patient care [1]. Several neuronal components and structural components are necessary to maintain urinary continence in the normal bladder. However, a disruption in this normal anatomy and physiology results in urinary incontinence.

The use of antibiotic prophylaxis is also described in this issue [2]. Urinary tract infections are a common cause of patient morbidity following office urologic procedures, especially in patients with neurogenic bladders. Recently, the European Association of Urology (EAU) updated their urinary tract infection management guidelines, and the American Urological Association (AUA) published a best-practice policy statement regarding antimicrobial prophylaxis for urologic surgery. These considerations and other pertinent issues regarding antibiotic prophylaxis are discussed in more detail in one of the articles.

Over the past two decades, there have been many developments in the medical therapy of patients with neurogenic bladders. The treatment for the patient with a neurogenic bladder has evolved from the wearing of diapers to the better understanding of the bladder pathophysiology and the threatening upper tract damage. This has resulted in clean intermittent catheterization, new surgical techniques and a wide spectrum of drug therapies that modulate the function of the lower urinary tracts. These themes are discussed in this issue [3].

Botulinum-A toxin, a relatively new treatment option, is discussed as a treatment for the symptoms of urgency, frequency, urge incontinence and poor bladder compliance [4]. This treatment has resulted in an overall improvement in quality of life for patients who are already undergoing clean intermittent catheterization. However, the



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risk of requiring clean intermittent catheterization after injection remains unknown. This possible requirement may impact a patient's assessment of their quality of life postoperatively, despite adequate treatment of their initial complaints. With these benefits come the potential side effects. Botulinum-A toxin injection is associated with the uncommon serious side effect of distal muscle weakness. However, long-term safety data continue to grow.

There is a significant amount of research currently being performed for the child and adult with neurogenic bladder. One of the most fascinating is regenerative medicine. One of the leaders in the field provides a captivating article on this topic, and its use for the neurogenic bladder [5]. The basic science and clinical applicability of this technology will continue to have a high profile in the future care of patients with neurogenic bladder.

Therefore, there are several etiologies for the neurogenic bladder and many available treatment modalities. These issues and the developing therapeutic options that may become readily available in the future are discussed. The goal is for the reader to understand the complexity of this condition and the advances that are currently available for the healthcare provider, and what to look for in the future.

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