NEUROSCIENZE

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Lo scopo di questa Collana è di raccogliere, sistematizzare e divulgare ad un pubblico scientifico formato e/o in formazione sia le esperienze personali degli Autori, pubblicate ed accreditate, che quelle prelevate dalla Letteratura Scientifica Internazionale di livello, relative ai vari aspetti biologici, medici, diagnostici e chirurgici dell'immenso capitolo delle Neuroscienze. Anatomia, biologia molecolare, biochimica, fisiologia, farmacologia, genetica, immunologia e patologia del sistema nervoso centrale, periferico e di quello autonomo sono i titoli delle Neuroscienze di base. Semeiotica diagnostica fisica funzionale e per immagini, terapia medica e chirurgica delle malattie neurologiche e neurochirurgiche costituiscono invece i titoli della dimensione applicativa delle Neuroscienze.

I volumi pubblicati nella presente Collana editoriale sono stati valutati secondo il sistema di revisione tra pari.

Angelo Lavano

Functional Neurosurgery for Neurogenic Overactive Bladder

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To my children Serena and Francesco

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Preface

The last book of Prof. Lavano is dealing with the very special Chapter of Functional Neurosurgery for Neurogenic Overactive Bladder. The ones who think that the Topic is out of the competence of the Neurosurgeons are wrong. Despite the need of a precise knowledge of the anatomy and the physiology of this very special neural circuits, traditionally in the hands of urologists , the function of the neurosurgeon is of paramount importance since it plays a strategic role in the permanent etiologic treatment of this challenging disease by means of neuromodulation.

The Author shows us that the two functions of the bladder — storage and voiding — are mediated by trans-spinal volleys so that intact cord connections between the pons and the sacral segments are necessary to sustain physiological control. Furthermore, input from higher centres is critical in the assessment of appropriate timing of voiding and many types of cortical disease can affect the centres involved with this. In addition to the spinal pathways and input from higher centres, the peripheral innervation to the bladder is through the pelvic plexus, sacral, and pudendal nerves.

Because of the complex nature of the neural control of the lower urinary tract, complaints about bladder function are common in patients with neurological disease. However, despite this complexity of neural control, when considered from the point of view of possible dysfunctions, these are limited to those causing a failure of storage or those causing a failure of emptying. Most commonly patients with neurological disease have problems with the former and have incontinence. Some patients, however, may have urinary retention. In addition, there is a large group of patients, particularly those with disruption cord disease, who have a combination of incomplete emptying and bladder overactivity. This is the main topic of this book. Neuromodulation and Functional Neurosurgery latu senso are appealing new techniques that can be proposed to treat neurogenic bladder dys-

function according to miniinvasiveness. Technological improvements, including the production of miniaturized, more flexible and resistant electrodes, more stable and empowered integrated circuits and the application of telemetry for computerized setting of the stimulators and transfer of data, will widespread the use of such techniques in the clinical practice.

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