

Ain Shams University
Institute of Postgraduate Childhood Studies
Medical Department

**PREVALENCE OF ENURESIS AMONG
PRIMARY SCHOOL CHILDREN IN BANHA**

THESIS

Submitted in partial fulfilment of the
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(Medical Department)

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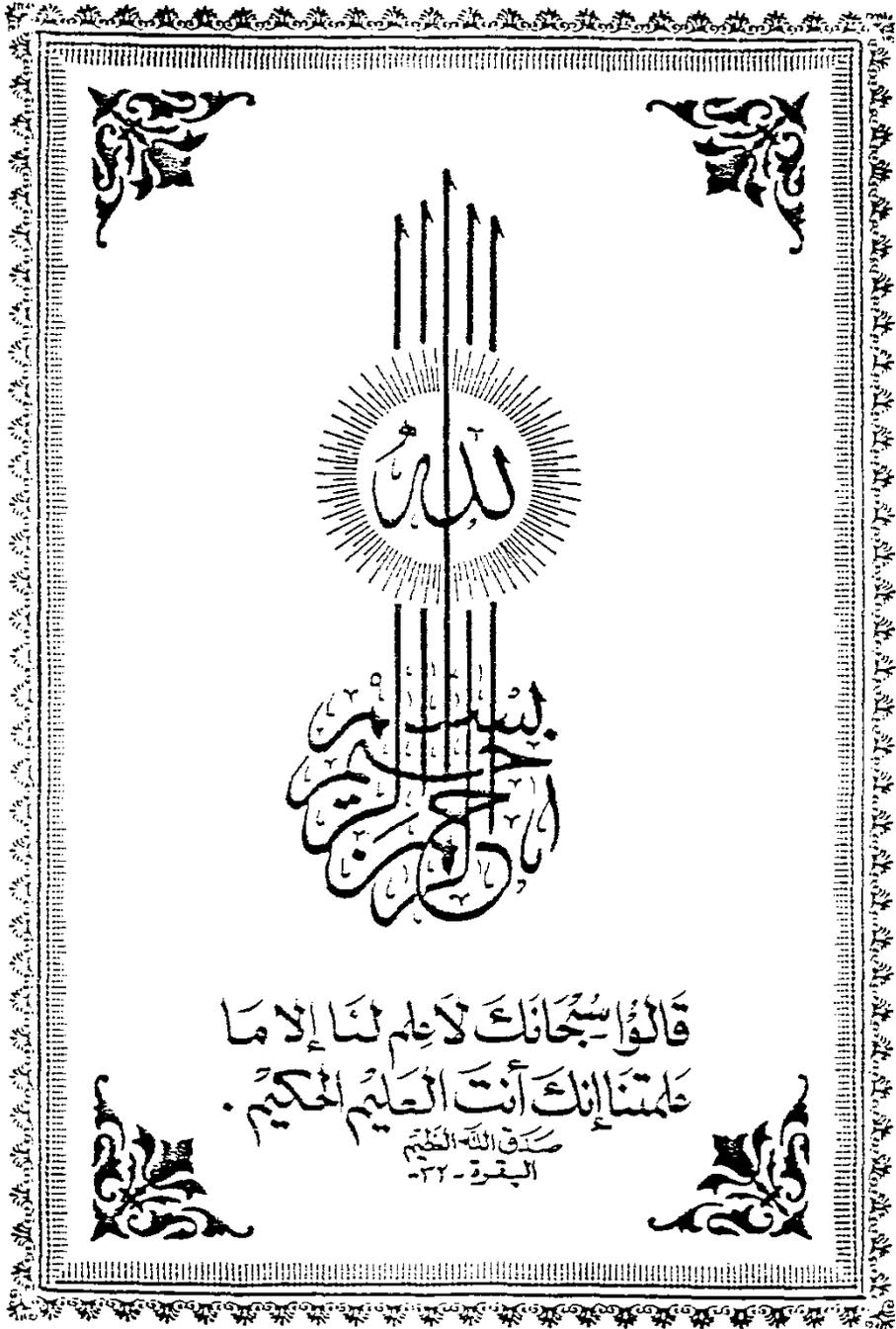
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..... /

Dedication...

***To the memory
of my father.***

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Review of Literature

INTRODUCTION

The essential foundation of understanding any disease process is a firm concept of the underlying anatomy and physiology of the system involved. A review of the mechanisms of urinary control are therefore briefly outlined (*McLorie, 1987*).

The primary organ of urine storage, the urinary bladder is a hollow viscous organ composed of a complex arrangement of smooth muscle fibers, blood vessels and connective tissue with an innate capacity for elasticity (i.e. the ability to resume its normal shape). Its major two functions are storage and expulsion of urine.

I. Storage

Filling of the empty bladder occurs at an average rate of about 1 ml/min or urine coming in spurts synchronous with each peristaltic wave of the ureteric walls. The valve like mechanism of the ureteric orifices prevents the backflow of urine.

Continence of urine is present if intra-urethral pressure exceeds intravesical pressure (*Enhorming, 1961*) and both the bladder and ureteral function is essential to maintain this pressure difference.

II. Expulsion

The ability to empty the bladder is a function of both the detrusor and urethral control mechanism at the bladder outlet. The urinary continence mechanism is not composed of a single sphincter muscle, instead, it is a complex and integrated functional area of the bladder outlet composed of both smooth and striated muscles, each under separate but integrated neural control. The inner sphincter or bladder neck mechanism is a network of smooth fibers, the function of which is to provide continence in the resting state. The striated muscle component or external sphincter is under voluntary control: its relaxation is activated by the central nervous system (CNS) as an initiating mechanism of voiding in the micturition cycle. In addition its activation at times of severe urgency or increased abdominal pressure prevents incontinence until a socially acceptable time for voiding occurs (McLorie, 1987).

Urinary continence and micturition are governed by a complex integration of (1) somatic, spinal and parasympathetic (pudendal nerve S₂-S₄), (2) sympathetic via the hypo gastric nerve plexus T₁₁-L₂ and (3) supraspinal nerve centers (Fig. 1) (Bradley, 1974).

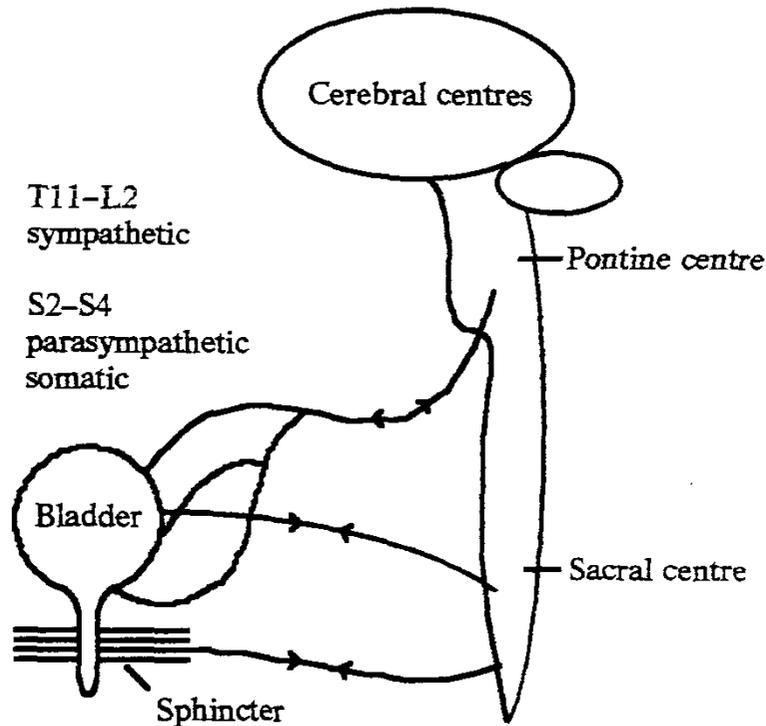


Fig. (1): Neurogenic control of the urinary bladder function.
(McLorie, 1987).

The parasympathetic receptor sites are located throughout the detrusor and proximal urethra but are more abundant within the detrusor region. These receptors when stimulated, produce a contraction of the detrusor muscle that results in an increase in intravesical pressure, which in turn is the primary force for bladder emptying.

Sympathetic receptors include both alpha-adrenergic and beta-adrenergic receptors and are located in the lower urinary tract system. Alpha fibers predominate in the bladder neck and smooth muscle region

of the urethra: their stimulation results in a contraction of these regions thereby inhibiting bladder emptying, while their inhibition relaxes the bladder neck and proximal urethra and facilitates micturition. Beta-adrenergic receptors are most abundant in the bladder body. Their stimulation causes relaxation in the detrusor to facilitate storage: their inhibition promotes detrusor contraction to enhance bladder emptying (El-Badawi, 1968; Bradley, 1974).

The pudendal nerve arising from S₂-S₄ is the somatic spinal nerve to the striated muscles of the external sphincter. Stimulation of the sphincter provides voluntary resistance to urine flow to facilitate storage: its inhibition reduces outlet resistance and enhances bladder inhibition.

From the sacral spinal micturition center afferent and efferent pathways connect to the lower brain stem, where three centers exist; a facilitatory center in the anterior pons; an inhibitory center in the mid brain, and a second facilitatory center in the posterior hypothalamus. These areas combined are also called the pontine micturition center. It has two overall net effects: to inhibit micturition and to regulate and coordinate the external sphincter during voluntary voiding (Bauer, 1985).