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The *Hospital Physician Obstetrics and Gynecology Board Review Manual* is a peer-reviewed study guide for residents and practicing physicians preparing for board examinations in obstetrics and gynecology. Each quarterly manual reviews a topic essential to the current practice of obstetrics and gynecology.

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Chronic Pelvic Pain of Bladder Origin: Interstitial Cystitis

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Chronic Pelvic Pain of Bladder Origin: Interstitial Cystitis

Daniel R. Mishell, Jr., MD, and Jeffrey R. Dell, MD, FACOG, FACS

INTRODUCTION

Chronic pelvic pain (CPP) is a common condition that affects an estimated 9 million women of reproductive age in the United States, or approximately 15% of the adult female population.¹ The American College of Obstetricians and Gynecologists (ACOG) defines CPP as “noncyclic pain of 6 or more months’ duration that localizes to the anatomic pelvis, anterior abdominal wall at or below the umbilicus, lumbosacral back, or the buttocks and is of sufficient severity to cause functional disability or lead to medical care.”² Women with CPP typically complain of pain in the lower abdomen, vulva, urethra, vagina, medial thighs, and/or perineum; pain during or after sexual intercourse; and pain associated with hormonal changes. Additionally, the pain is typically accompanied by urinary or irritative voiding symptoms.

Evaluation of CPP accounts for 12% of gynecologic outpatient referrals³ and 40% of gynecologic laparoscopies;⁴ however, in the majority of laparoscopies performed for evaluation of CPP, no evidence of pathology is found.⁵ At least 10% of hysterectomies are performed for the evaluation of CPP.⁶

Multiple disorders are associated with pelvic pain, including recurrent urinary tract infections (UTIs), endometriosis, vulvodynia, irritable bowel syndrome, and disorders of bladder origin, specifically interstitial cystitis (IC). The cause of CPP frequently is not diagnosed, as demonstrated by a prevalence study of CPP in which 61% of women who reported having pelvic pain in the previous 3 months also reported that the etiology of the pain was unknown.¹ Up to 85% of women with undiagnosed CPP may have pain of bladder origin.⁷ The most common cause of CPP of bladder origin in women is interstitial cystitis (IC), a chronic inflammation of the bladder characterized by urinary frequency/urgency and pelvic discomfort or pain in the absence of other obvious bladder pathology.

An estimated 700,000 individuals in the United States currently have IC, 90% of whom are women.⁸

Previous prevalence estimates of IC varied from 67 in 100,000 women⁹ to 510 in 100,000 women;¹⁰ however, recent studies indicate that as many as 1 in 4 or 5 women may have IC.¹¹ Most women diagnosed with IC are white. Women typically first notice the pain and urinary symptoms characteristic of IC during their twenties or early thirties but are usually not accurately diagnosed for 5 to 7 years,⁹ resulting in an average age at diagnosis of 42 to 46 years.¹² The psychological and physical effects of IC on quality of life (QOL) are considerable: up to 50% of women with IC are unable to work full time, and more than 60% have dyspareunia.¹³ The chronicity and pain of this disorder can lead to emotional problems; in fact, patients with IC score worse on QOL inventories than patients on dialysis.¹³

This manual describes the pathophysiology of IC and methods to diagnose the presence of this disorder. Effective therapies for treating IC are reviewed.

PATHOPHYSIOLOGY OF IC

The pathophysiology of IC remains unknown but is believed to be multifactorial. The prevailing theory is based upon specific alterations in permeability of the epithelial layer of the bladder. In the healthy bladder, a mucopolysaccharide lining, or glycosaminoglycan (GAG) layer, overlays the bladder epithelium. This lining secretes bladder surface mucin that prevents the absorption of caustic urinary components. Mucin also prevents bacteria from adhering to urothelial surfaces, thereby inhibiting bladder infections. Damage to the GAG-mucus-mucin layer allows urinary solutes such as urea and potassium to permeate the bladder wall.¹⁴ Leakage of potassium into the bladder depolarizes nerves and muscles, eventually causing tissue damage and pain (**Figure 1**).¹⁵ It should be noted that pain can occur in the absence of histologic evidence of tissue damage; most patients with mild IC will have an entirely normal bladder appearance on cystoscopy.

Women with IC also have more C fibers (pain-carrying nerves that carry and release substance P) and mast cells