

PROSTATE LITHIASIS

NICOLAE GRIGORE¹, VALENTIN PÎRVUȚ², IONELA MIHAI³, ADRIAN HAȘEGAN⁴

^{1,2,3,4}“Lucian Blaga” University of Sibiu

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Abstract: Prostatic lithiasis is commonly found in patients over 50 years of age, is rare under 40 years of age and very rare in children. Asymptomatic prostatic calculus is frequently highlighted by routine ultrasound examination or radiological examinations. The association of prostatic lithiasis with chronic prostatitis and benign prostate hyperplasia is common. The vast majority of prostatic calculi are latent progressive, being incidentally discovered on prostate ultrasound, basin radiographs or adenectomy. There is no pathognomonic symptomatology for prostate disease. Symptoms, when present, may be due to prostatic hypertrophy, urethral strictures or chronic prostatitis. In this review, we will describe the prevalence, etiopathogenesis, symptomatology, diagnosis and treatment options currently available for prostatic lithiasis.

INTRODUCTION

Prostate lithiasis must be distinguished from prostatic urethral calculi. There are two varieties of prostatic calculi: primitive (endogenous) calculi, which are formed in glandular crypts, around simpexions and secondary calculi (exogenous) which form in the urethral diverticula or pathological prostate geodes.

The prevalence of primitive prostatic calculi with asymptomatic evolution is unknown because in many cases they are diagnosed incidentally during ultrasound examination or routine radiological investigations. Prostate lithiasis is commonly found in patients over 50 years of age, under 40 years of age and very rare in children.(1)

Geramoutsos (2004), in a study of 1374 young men who were examined by ultrasound shows prostate lithiasis in 101 of them, of which 72% represents primitive prostatic lithiasis, which the author defines as type A (small, multiple stones) and 28% secondary prostatic lithiasis type B (large, single stones). He concluded that small, multiple calcifications are a normal, often incidental ultrasonographic finding in the prostate and represent a result of age rather than a pathologic entity. However, larger prostatic calculi may be related to underlying inflammation and require further evaluation and possibly, treatment.(2)

Etiopathogenesis. Primal prostatic calculus develops in prostatic glandular cells by depositing the limestone material on the amyloacea bodies present in the prostate gland, round or oval, with a diameter of 2-5 mm. The amyloacea bodies have a laminated structure composed of lecithin and protein substances arranged around descrambling epithelial cells. Inorganic salts (calcium phosphate and calcium carbonate) impregnate the body of the amyloacea, turning them into calculus. These are rare in young people but are common in men over 50 years of age.

It was described that prostate calculi occur by precipitating calcium and magnesium phosphate salts in normal prostatic fluid. The infection also contributes to the formation of prostatic calculi.(3)

Acinar obstruction associated with HBP has been implicated as a major predisposing factor in prostatic calculus

formation. Examination of crystals by calculus indicates that some prostatic calculi are formed from urine constituents, not prostatic secretions, suggesting that intraprostatic urinary reflux is important in the appearance of these calculi.(4)

Histopathology. Chemical composition. Primitive stones are small, very numerous in glandular acins. Secondary calculi are inside tiny infected diverticula and in urethral communication, where they can be spontaneously eliminated.(5)

Prostatic calculations are formed from calcium phosphate trihydrate (whitlockite) and carbonate organic components (proteins, cholesterol) account for approximately 20% of the composition of the calculation.(6)

It has been suggested that primary or endogenous lithiasis is mainly composed of constituents of prostatic secretions and secondary or exogenous calculi are formed mainly from urinary constituents.(7)

Symptomatology. Diagnostic. The vast majority of prostatic calculi are latent progressive, being incidentally discovered on prostate ultrasound, basin radiographs or adenectomy. There is no pathognomonic symptomatology for prostate disease. Symptoms, when present, may be due to prostatic hypertrophy, urethral strictures or chronic prostatitis. Terminal bladder bleeding may be present. In some cases, hemospermia, painful erections, and perineal discomfort may occur during ejaculation. Type B prostatic lithiasis is more commonly correlated with the symptoms of chronic prostatitis.(2,8) Prostate abscess and gland discharge are favored by infected prostate lithiasis. In this situation, the symptomatology becomes complex, evolving inconstantly with dysuria, polakiuria, urgency, urinary retention, or hematuria. For evidence that prostate lithiasis is infected requires bacterial cultures from calculus. Calculi can be considered infected with those with documented bacterial chronic prostatitis.

Multiple lithiasis is common in men with chronic bacterial prostatitis. Uninfected prostatitis do not produce common symptoms, whereas in prostatitis patients prostate lithiasis become infected and serve as a source for bacterial persistence and recurrent urinary infections.(9)

Diagnostic of prostate lithiasis is characterized by

⁴Corresponding author: Adrian Hașegan, Str. Lucian Blaga, Nr. 2A, Sibiu, România, E-mail: office@urologiesibiu.ro, Phone: +40745 381064
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digital rectal examination, sometimes experiencing characteristic cramps compared to the sensation of the wallet. Differential diagnosis should be done with chronic nodular prostatitis and prostate cancer. The association of prostatic lithiasis with prostate cancer is possible but rarely encountered.(10)

The ultrasound and plain abdominal radiography confirms the diagnosis of prostatic calculi (figures no.1,2). The multiple hyperechoic images, of millimeter size, evenly distributed on the prostate periphery, are characteristic of prostate casting type A. In other situations, ring-shaped images (shadows surrounding a clear central part of the periurethral adenoma) or horseshoe (the stones are present laterally on both sides of the gland and are absent from the prostate urethra) appear in the ring. Volumetric prostate calculus is highlighted in the form of hyperechoic images with an important shadow cone. Trans-rectal ultrasound of the prostate detects prostate size and variable calculus in the prostate with an incidence of 75% in the young man and 100% in the elderly. Moreover, transrectal ultrasound records prostate calculi in 70% of men who have no radiological signs of prostate lithiasis.(11)

Figure no. 1. Ultrasound – Prostate calculi

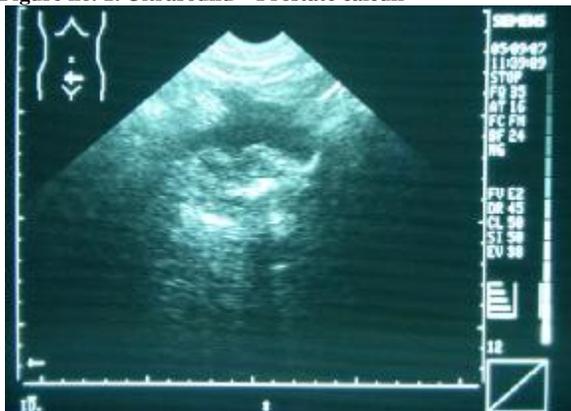


Figure no. 2. Plain abdominal radiography



Endoscopic examinations (urethroscopy) reveals prostate hypertrophy, when it is present and sometimes prostate urethral calculus that can obstruct the urethra. Occasionally, a particular scratching sensation is perceived during the introduction of the urethroscope.(12)

Treatment. Though prostate stones are generally accepted as clinically silent, few cases were reported to have surgical intervention for severe obstruction caused by large

prostate stones. Usually patients with asymptomatic prostatic calculi require no treatment. Surgical procedures like open trans-vesical prostate stone extraction, endoscopic extraction open prostaticolithotomy and even radical prostatectomy have been performed to extract these stones.(13)

Patients with significant symptoms benefit from treatment based on current disorders. First, a correct diagnosis of association of chronic prostatitis with infected prostate lithiasis should be made. The presence of infected calculi makes medical treatment alone not always effective in these patients. Although conventional antimicrobial therapy controls the symptoms and prevents bacteriuria, infected prostate calculi cannot be sterilized by medical therapy.

Patients with chronic bacterial prostatitis, especially those with prostate lithiasis that are not cured by medical therapy, become candidates for surgical therapy. Final healing of the infection is only achieved when all prostatic calculi and infected prostate tissue are removed by surgical procedures, especially by radical TUR-P.(14)

In our statistics of 49 cases of prostate lithiasis, 27 followed by surgical treatment with healing in 18 cases and amelioration of symptomatology in 9 cases and 22 followed by medical treatment with improvement in 10 cases and no relief of symptoms in 12 cases .

In the case of prostate lithiasis coexistence with HBP, is indicated trans-urethral resection of prostate (TUR-P) or trans-vesical adenomectomy.(8)

The abscess of the prostate will be punctured or incised perineal, trans-urethral or trans-rectal, while extracting the calculus. In the case of chronic suppuration to the prostate urethra, the pathological cavities will be opened endoscopically, associating an antimicrobial treatment with culture and antibiogram.

In the presence of symptomatic multiple calculi and recurrent infection, total prostatectomy with bilateral vesiculectomy provides healing.(15)

CONCLUSIONS

Etiologically, they can be classified into endogenous calculi formed from constituents of the prostatic secretions as a result of inflammation, infection or obstruction and exogenous calculi formed from the elements that enter the urine composition during intraprostatic urinary reflux. Another clinical category is calculus originating from the upper urinary tract and affecting the prostate urethra.

Most cases are asymptomatic. Mild urinary symptoms such as moderate polyuria, dysuria, hematuria, perineal or scrotal pain are inconsistent. Combination with prostatitis or HBP generates a complex symptomatic pattern with irritant and obstructive urinary symptoms associated with chronically pain pelvic syndrome.

Diagnostic for prostate lithiasis is not difficult; the diagnosis is established by digital rectal examination, ultrasound and radiographic images. The suprapubic or trans-rectal prostatic ultrasound is the highest diagnostic accuracy.

Asymptomatic calculations do not require treatment, but patients should be maintained under clinical and ultrasound observation as the functionality and permeability of the glandular ducts with the onset of infection and sometimes the progression towards abduction are impaired over time.

Prostatitis is difficult to treat especially in symptomatic young people. The objectives of the treatment are control of antibiotic and anti-inflammatory infection, efficient drainage of glandular secretions, drainage of suppressed collections and removal of the stones, along with treatment of accompanying prostate conditions.

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Surgical treatment consists of removal of calculi by TUR-P or trans-vesical prostatectomy. Radical prostatectomy, rarely indicated for prostate lithiasis with recurrent infections, is the only method that provides healing.

REFERENCES

1. Manon M, Parulkar B, Drach G. Urinary lithiasis: etiology, diagnosis and medical management in Campbell's Urology – Seventh Edition. 1998;3:2716-2717.
2. Geramoutsos I, Gyftopoulos K, Perimenis P, Thanou V, Liagka D, Siambli D, Barbali G. Clinical correlation of prostatic lithiasis with chronic pelvic pain syndromes in young adults. *Eur Urol*. 2004 Mar;45(3):333-7.
3. Meares E. Prostatitis and related disorders - in Campbell's Urology – Seventh Edition. 1999;1:623.
4. Gawande, AS. Brushite Lithiasis of Prostate. *B J Urol*. 1986;58(2):230.
5. Sondergaard G, Vetner M, Christensen PO. Prostatic Calculi. *Acta Pathol. Microbiol. Immunol. Scand*. 1987;95(3):141-5.
6. Klimas R, Bennett B, Gardner Wa JR. Prostatic Calculi: A review. *Prostate*. 1985;7(1):91.
7. Dahnert WF, Hamper UM, Walsh PC, Eggleston JC, Sanders RC. The Echogenic Focus In Prostatic Sonograms, With Xeroradiographic And Histopathologic Correlation. *Radiology*. 1986;159(1):95-100.
8. Drach GW. Sexuality and prostatitis: a hypothesis. *J Am Vener Dis Assoc*. 1976 Dec;3(2 Pt 1):87-8
9. Koh KB. Symptomatic Prostatic Calculi- A Rare Complication After TURP. *Med J Malaysia*. 1995;50(3):280-1.
10. Melone F, Lardani T, Azzaroli G, et al. Dumbell Stone of Prostatic Fossa after Prostatectomy. A Combined ESWL and Suprapubic Percutaneous Treatment. *Acta Urologica Belgica*. 1996;64(4):27-31.
11. Meares EM JR. Acute and chronic prostatitis: diagnosis and treatment. *Infect Dis Clin North Am*. 1987 dec;1(4):855-73.
12. Meares EM JR., Prostatitis. *Med Clin North Am*. 1991 Mar;75(2):405-24.
13. Meares EM JR. Prostatitis: review of pharmacokinetics and therapy. *Rev Infect Dis*. 1982 Mar-Apr;4(2):475-83.
14. Gutierrez R. Perineal prostatectomy and prostatectomy for the removal of prostatic calculi - *Ann Surg*. 1941 April; 113(4):579-624.
15. Drach GW. Prostatitis: Man's hidden infection. *Urol Clin North Am*. 1975 Oct;2(3):499-520.