



AMERICAN JOURNAL OF PHARMTECH RESEARCH

Journal home page: <http://www.ajptr.com/>

A Review of Antibiotics Management of Chronic Prostatitis / Chronic Pelvic Pain Syndrome

Neethu J* ,Manuja VS¹ ,Anjaly S Kumar¹ ,Nithika Chacko¹ ,Rengith Raj¹
Sree Krishna, College of Pharmacy and Research Centre ,Thiruvananthapuram

ABSTRACT

Prostatitis is the inflammation of the prostate gland can be due to an infection as well as other various causes. Prostatitis is a common condition, with 35- 50 % of men affected with symptoms associated with Prostatitis during their lifetime. Prostatitis can be caused by bacteria that leak into the prostate gland from the urinary tract. It can also caused by sexually transmitted organism such as Neisseriagonorrhoeae Chlamydiatrachomatis, HIV, Escherichia coli. According to National Institute Of Health Chronic Prostatitis Symptoms (NIH-CPSI) Prostatitis is of three types, Acute bacterial prostatitis, Chronic bacterial prostatitis, Chronic prostatitis /chronic pelvic pain syndrome, A symptomatic inflammation prostatitis .Chronic prostatitis /chronic pelvic pain syndrome is the common condition and most cases of prostatitis fall into this category. Traditionally, Chronic prostatitis /chronic pelvis pain syndrome in men was believed to be related to inflammation (usually secondary to infection) localized to the prostate [1]. Management of chronic prostatitis/chronic pelvic pain syndrome consisted of antibiotics and anti inflammatory and, later α -blockers and 5α -reductase inhibitors. α -Blockers, antibiotics and combination of these therapies provide greatest improvement in treatment of chronic prostatitis/chronic pelvis pain syndrome. Chronic prostatitis is not a single condition, but a term that is loosely used to describe a group of conditions causing genito –pelvic pain and urinary dysfunction in adult men [10].Both chronic prostatitis and the chronic pelvis pain syndrome is associated with abnormalities in semen and infertility and also result in the reduction in the quality of the life. Prostatitis tissues are best penetrated by drugs with a high pKa and high lipid solubility, such as quinolones ,macrolides ,tetracyclines and sulfa drugs [3]. Antibiotic therapy is recommended for acute exacerbation of chronic prostatitis, chronic bacterial prostatitis and chronic inflammatory prostatitis, if there is clinical, bacteriological or supporting immunological evidence of prostate infection[9]. Antibiotics treatment should be stopped if there is no improvement in symptoms. Many patients with category III prostatitis will improve with antibiotic therapy.

Keywords: Chronic prostatitis/chronic pelvic pain syndrome, management, antibiotics therapy

*Corresponding Author Email: neeth245@gmail.com

Received 01 April 2018, Accepted 23 April 2018

INTRODUCTION

Prostate gland is a walnut sized gland which is part of the male reproductive system .It is located below the bladder and in front of the rectum. Main function of prostatitis gland is to produce seminal fluid in order to transport sperm through the urethra. Prostatitis is the inflammation of the prostate gland caused by infection as well as other various causes. Chronic prostatitis /chronic pelvic pain syndrome (CP/CPPS) ,which accounts for 90%-95% of cases [12,13], is a clinical entity defined as urologic pain or discomfort urinary symptoms and or sexual dysfunction, lasting for at least 3 of the previous 6 months [8].This condition (NIH category) is called the *Pelvic pain syndrome* and commonly manifest as pain in areas including the perineum, rectum, prostate, penis, testicles and abdomen [2].Management of CP/CPPS include antibiotics , α -blockers and inflammatory agents are routinely used .Antibiotics are the most and first recommended drugs in the treatment of chronic prostatitis /chronic pelvic pain syndrome.

Chronic Prostatitis/Chronic Pelvic Pain Syndrome

Chronic prostatitis can present with a wide variety of signs and symptoms and syndromes are among the most common and most poorly understood conditions in urology [3]. Most of the prostatitis cases are come under chronic prostatitis /chronic pelvic pain syndrome. This condition is characterized as inflammatory or non-inflammatory depending upon the presence or absence of infection fighting cells in the urine, semen and prostatic gland. According to the National Institute of Health (NIH) chronic prostatitis is categorized as Category III Prostatitis. Category III patients are now collectively referred to as having chronic pelvic pain syndrome (CPPS). The cause of category III prostatitis may be bacterial infection or an autoimmune or other inflammatory reaction, neuromuscular pelvic muscle spasm or sterile urinary reflux into the prostate[3]. Gram positive bacteria may be considered pathogens in men with CPPS. Staphylococcus epidermidis or Corynebacteria like gram –positive organisms shows clear role in the category III prostatitis or chronic prostatitis/chronic pelvic pain syndrome. CBP and CP/CPPS can have negative impact on quality of life [7].The quality of life of men with chronic prostatitis/chronic pelvic pain syndrome is shown to be as poor as that of patients with congestive heart failure or Crohn's disease [6,7].

Men of all age group can be affected with prostatitis during their lifetime but more risk found in young and middle aged men. Chronic bacterial prostatitis has been associated with risk factors for urinary tract infection , including urethral catheterization or instrumentation [2].The symptoms are characterized by various abnormalities including increased levels of cytokines, voiding dysfunction, immunologic dysfunction, and physiologic disturbances (such as neurosis, psych

somatization, depression, and sexual problems)[4]. These symptoms may be continuous, intermittent or relapsing and symptoms may either be severe, leading to immediate medical consultation or so mild that the patient waits months before seeking care [5]. Pain felt in the perineum, penis, scrotum, lower abdomen, back or groin[5].

There is no 'gold standard' for a definite diagnosis of CP/CPPS, which is typically based on patient history, symptoms and exclusion of other causes [11,7]. The diagnosis is usually done by analysing a urine sample and examination of prostate gland. The examination of prostate gland involves a digital rectal examination to palpate the prostate gland and feel for abnormalities of the gland. In chronic prostatitis the prostate gland may be small or enlarged, boggy or firm. Additional tests include a complete blood count (CBC), an electrolyte panel, blood cultures, if any discharges present PSA levels also checked. Other tests include urodynamic tests, ultrasound imaging, CT imaging, cystoscopy and prostate biopsy. Identification of symptoms and a symptom based treatment is recommended for the management option for CP/CPPS or CBP.

Antibiotics Management of CP/CPPS

A wide spectrum of microbial strains may cause in chronic prostatitis / chronic pelvic pain syndrome. Antibiotics are the most popular choice of therapy for all categories of chronic prostatitis/chronic pelvic pain syndrome. As with the chronic symptoms and sign a long term treatment duration is recommended in the case of patients with chronic prostatitis /chronic pelvic pain syndrome. The minimum duration of antibiotic treatment should be 2-4 weeks and if there is improvement in the symptoms treatment should be continued for further 2-4 weeks. Antibiotic treatment should not be given for 6-8 weeks without an appraisal of its effectiveness [9]. The choice of antibacterial drugs is based upon the pathogen and its sensitivity and pharmacokinetics of the drug. In terms of pharmacokinetics, the antibiotics drugs are selected based on how it penetrates to the site of prostatic infection.

The selection of appropriate therapeutic agents requires a broad antibacterial spectrum, including the above –mentioned Gram – negative and Gram-positive uropathogens, and sufficient drug penetration into the inflamed prostatic gland [14]. Most antibiotics that are active against urinary tract pathogens diffuse poorly into prostatic fluid and tissue [9]. The diffusion of an antibiotic into the prostate site of infection is a critical factor in determining its effectiveness in treatment [9]. Antibiotic drug that diffuse into the site of prostatic infection, an antibiotic must be lipid-soluble, a weak base and have a dissociation coefficient (pKa).

A logical choice of antibiotics for empirical therapy would therefore be one has a broad spectrum of activity against the most probable pathogens [9]. The levofloxacin, fluoroquinolones, ofloxacin

and ciprofloxacin are recommended because of their favourable antibacterial spectrum and pharmacokinetic profile. Antibiotics like quinolones, tetracycline and macrolides, in the absence of infection, they also have a direct anti-inflammatory mechanism by blocking cytokines such as IL-1, IL-8 and TNF. The 5-fluoroquinolones are the most promising class of antibiotics recommended for the chronic prostatitis / chronic pelvic pain syndrome. The fluoroquinolones are amphoteric drugs and have two pKa values, one at acid pH and one at alkaline pH and these drugs easily diffuse into the prostate infection site. Modern fluoroquinolones such as norfloxacin, ofloxacin and ciprofloxacin are recommended treatment with the duration of 2 to 4 weeks.

In case of patients with Gram – negative infection levofloxacin 500mg and ciprofloxacin 500mg shows a superior minimum inhibitory concentration (MICs) are recommended for a duration 4 weeks. Even though both these drugs shows superior effects, levofloxacin shows more effective action than ciprofloxacin in terms of bacterial clearance and improving the clinical symptoms and signs and levofloxacin is more widely used antimicrobial agents. Trovafloxacin shows a excellent anecdotal experience in the treatment of prostatitis which has been discontinued due to its hepatic toxicity.

Tetracyclines and erythromycins have been used in the treatment of prostatic infection. Tetracyclines shows a moderate effects in the treatment of CBP with the additional potential benefits for ureaplasma and chlamydia. Tetracyclines are cheap when compared to other class of antibiotics and these class of drugs shows a good activity against Chlamydia and Mycoplasma. Tetracyclines are recommended for special indications in case of patients with CP/CPSP. Erythromycin, because of their excellent penetration and effect on organisms in urethritis and prostatitis have been used. Clarithromycin and azithromycin like newer agents are also recommended for the treatment of chronic prostatitis/chronic pelvic pain syndrome because of their prostatic penetration as well as their penetration ability to the bacterial biofilms.

Macrolides have reasonable mechanism of action against Gram-positive bacteria and it shows good penetrating effect into the prostate infection site. Macrolides are also effective against Chlamydia and these class of antibiotics are relatively nontoxic. Macrolides shows unreliable mechanism of action against Gram – negative bacteria and these drugs reserved for special indications.

Trimethorpin shows a good penetrating action into the infecting prostate site. Trimethorpin is available in both oral and parenteral forms and these drugs are relatively cheap. In case of methorpin frequent monitoring is not necessary and active against most of the relevant pathogens. Trimethorpin also consider for the treatment of chronic prostatitis. Co-trimoxazole have no

advantages over trimethorpin and not much recommended because of its incidence of adverse effects with age. The aminoglycosides and β -lactam antibiotics are recommended for the treatment of category III prostatitis because they offer no therapeutic advantages .

Both oral and injectable antimicrobial agents are recommended for the treatment. Probiotics are recommended for reducing the gastrointestinal side-effects resulting from the long term course of broad- band antibiotics. Antibiotics in combination with α -blockers also shows a great improvement in the symptoms and sign and also shows the improvement in the quality of life particularly for patients with predominant voiding dysfunction.

CONCLUSION

Prostatitis is a wide spread condition in men which associated with the signs and symptoms of the prostate which is the part of male reproductive system. Category III prostatitis called chronic prostatitis /pelvic pain syndrome management with antibiotics provide a better improvement in the symptomatic relief of disease and also provide a increase in the quality related life of the patients. Fluroquinolones class of antibiotics provide better therapeutic effects in the CP/CPPS patients because of their excellent penetration ability to the prostate and favourable pharmacokinetics and good bioavailability and these class of drugs also shows a good activity against both Gram-positive and Gram-negative bacteria. Tetracyclines , macrolides , aminoglycosides are not considered for the treatment because of their unreliable activity against these bacteria. Trimethorpin and fluroquinoles are most considerable antibiotics class of drugs because of their broad – spectrum of action in chronic prostatitis /chronic pelvic pain syndrome.

REFERENCE

1. J. CurtisNickel, MD, FRCSC et al. Management of Men Diagnosed with Chronic Prostatitis/Chronic pelvic pain syndrome who have Failed Traditional Management; Reviews in Urology. vol 9 [2],2007;63-72
2. Anthony J Scheffer, MD; Chronic Prostatitis and the Chronic Pelvic Pain Syndrome; NEngl J Med.2007;355:1690-8
3. Daniel .A. Shoskes .Use of Antibiotics in Chronic Prostate Syndrome; The Canadian Journal of Urology 2001;8(sup 1):24-28
4. McNaughton Collins M, MacDonald R, Wilt TJ. Diagnosis and Treatment of Chronic A bacterial Prostatitis; A Systematic Review; Ann Intern Med 2000;133:367-381
5. Daniel A. Shoskes .et al. Diagnosis and Management of Acute and Chronic Prostatitis; Urologic Nursing Aug 2001;Vol 21;4;255-262

6. M.C.Naughton Collins M, Pontari M.A et al. Quality of Life is Impaired in Men with Chronic Prostatitis the Chronic Prostatitis Collaborative Research Network; J Gen Intern Med 2001;16;656-662
7. Jan Rees et al. Diagnosis and Treatment of Chronic Bacterial Prostatitis and Chronic Prostatitis /Chronic Pelvic Pain Syndrome; BJUint 2015;116;509-525
8. Thunyarat Anothaisintawee, MD et al. Management of Chronic Prostatitis/Chronic Pelvic Pain Syndrome; JAMA 2011;305(1);78-86
9. T.E .Bjerklund Johansen et al. The Role of Antibiotics in the Treatment of Chronic Prostatitis :A consensus Statement; EurUrol 1998;34:467-466
10. Luzzi JC .The Prostatitis Syndrome; Int J STD AIDS 1996;7:471-478
11. Lazaro. N. Sexually Transmitted Infection in Primary Care. Royal College of General Practitioners,2013.Available at <http://www.rcgp.org.UK>
12. De la Rosetta J.J, Hibregtse MR , Meuleman EJ et al. Diagnosis and Treatment of 409 patients with Prostatitis Syndrome; urology 1993;41(4):301-307
13. Kreiger JN, Nyberg L Jr, Nickel JC.NIH Consensus Definition and Classification of Prostatitis ;JAMA.1994;282(3);236-237
14. Heinert G et al. Analysis of perioperative ofloxacin concentration in serum and prostate tissue; Drugs 1993 ;45(suppl 3):358-359
15. Nickel JC, Downey J. Clark et al. Antibiotic pharmacokinetics in the Inflamed prostatitis; JUrol 1995;153:527-529.

AJPTR is

- Peer-reviewed
- bimonthly
- Rapid publication

Submit your manuscript at: editor@ajptr.com

