

Impact of Urinary Tract Infections in Diabetic Patient

James Murray*

Department of Botany, University of Chinese Academy of Sciences, Beijing, China

*Corresponding author: James Murray, Department of Botany, University of Chinese Academy of Sciences, Beijing, China, E-mail: JamesMurray@gmail.com

Received date: December 06, 2021; Accepted date: December 20, 2021; Published date: December 27, 2021

Citation: Murray J (2021) Impact of Urinary Tract Infections in Diabetic Patient. J Nephrol Transplant Vol.5 No.5:004.

Abstract

Diabetes is a global threat to quality of life and is estimated to affect 220 million people worldwide by 2020. Infectious diseases cause morbidity and mortality in diabetics. There is evidence that Urinary Tract Infections (UTIs) are the most common bacterial infections in diabetics. Patients with type 2 diabetes are more likely to develop a Urinary Tract Infection (UTI) and repeat UTIs than patients without diabetes, according to a report from the American Diabetes Association (ADA). Symptomatic bacteriuria in diabetic patients is serious and requires appropriate clinical attention for diagnosis and treatment. High levels of glucose in the urine can provide a rich source of nutrients for bacteria. Therefore, bacteria can multiply and form the basis of infection. High levels of glucose in the urine may allow microorganisms to colonise the urine. Furthermore, multiple mechanisms were implicated in UTI patients with diabetes. Diabetes, diabetic obesity, and diabetic overweight women are at the highest risk of UTI. Long-term hospitalization, recurrence of UTI, recurrence and reinfection, bacteraemia, hypernitrogenemia, and septic shock are the consequences of UTI associated with diabetes.

Keywords: Reinfection; Bacteraemia; Hypernitrogenemia; Diabetes

Description

Urinary tract infection in diabetics

Infections are frequent causes of morbidity and mortality in diabetic patients. Evidence suggests that Urinary Tract Infection (UTI) is the most common bacterial infection among diabetic patients [1]. High glucose concentrations in the urine can provide a rich source of nutrients for bacteria [2]. As a result, bacteria can multiply and lay the groundwork for infection; additionally, high glucose concentrations in urine can allow microorganisms to colonise the urinary tract. Moreover, some of the immunological defects like impaired neutrophil function, reduced T cell mediated immune response, low levels of prostaglandin E, thromboxane B2, and leukotriene B4 may contribute to increased the risk for infection [3]. Other conditions, such as bladder dysfunction (incomplete waste of the bladder) caused by autonomic dysfunction, can also

contribute to an increased risk of infection. Diabetes-related UTI can result in serious complications such as bacteraemia, renal abscess, and renal papillary necrosis [4]. In some cases, diabetes can alter the genitourinary system, damage organs and cause pyelonephritis. This type of UTI is 15 times more common in diabetics. As a result, for UTI diabetics, early diagnosis and appropriate treatment are critical. Molecular reasons for an increased frequency of UTI in diabetic patients include depression in the function of polymorphonuclear leucocytes, especially during acidosis, dysfunction of chemotaxis, and phagocytosis. High blood glucose levels may cause nerve damage, affecting the ability of the bladder to sense the presence of urine and thus allow urine to stay for a long time in the bladder, increasing the probability of infection.

Complications of urinary tract infection in diabetics

Emphysematous Pyelonephritis (EPN) is a severe and necrotic polybacterial nephritis associated with the formation of renal parenchymal gas. To date, more than 200 cases have been described in the literature. Poorly controlled diabetes is the root cause of up to 90% of the affected patients. The most common annoying organisms are *Klebsiella* and *Escherichia*, followed by *Proteus*. The clinical manifestations are non-specific and do not differ from the classic upper urinary tract infection triad (i.e., fever, abdominal pain, and pyuria) [5]. This often delays the diagnosis of EPN. Disseminated intravascular coagulation, acute respiratory distress syndrome, impaired consciousness, acute renal failure, and shock may be present in several serious forms. Diabetic ketoacidosis is a very rare condition, and very few have been reported so far. EPN requires a radiological diagnosis [6]. Traditional x-rays can show the gas sac covering the renal fossa. Ultrasonography identifies an enlarged kidney with high-amplitude echoes within the renal parenchyma. Computed Tomography (CT) is the best imaging test to determine the presence and extent of renal gas.

Treatment strategies

Treatment of urinary tract contamination in sufferers with diabetes is typically much like in non-diabetic sufferers. Key elements to recall consist of whether the person is affected with asymptomatic or symptomatic, or whether the contamination is localised to the bladder or kidney, and renal function.

Asymptomatic bacteriuria: There are no short-term or long-term benefits to treating asymptomatic bacteriuria in diabetic

women. Treatment of asymptomatic bacteriuria in strong diabetic sufferers does no longer lessen to the frequency of the next symptomatic episodes of cystitis, pyelonephritis, or hospitalisation for urinary tract infection. Asymptomatic bacteriuria by itself isn't linked to a higher risk of developing renal impairment or other long-term headaches in diabetics. Thus, screening for and remedying of asymptomatic bacteriuria in diabetic sufferers isn't indicated.

Symptomatic infection: Acute cystitis in women with good glucose control and without long-term complications should be managed as an uncomplicated urinary infection, usually with short-term antimicrobial therapy. Patients with pyelonephritis and mild or moderately severe presentations can usually be successfully treated with oral therapy. However, patients with pyelonephritis and severe systemic symptoms, including nausea and vomiting, or hemodynamic instability, should be hospitalised for initial parenteral antibiotic therapy. Patients with gastric emptying impairment will also usually require parenteral therapy. Parenteral antimicrobial therapy is modified to an oral regimen once patients can tolerate oral therapy, the clinical status of the patient has improved, and urine culture results are available. If infection is associated with complications such as renal or perinephric abscesses or emphysematous pyelonephritis, prompt intervention with a combined surgical and medical approach is often required.

Conclusion

Urinary tract infections are more common in diabetic patients. Diabetic patients are severely affected by urinary tract infections. Treatment of UTI without proper diagnosis may lead to antimicrobial drug resistance. Treatment with antimicrobial

agents should be started on the basis of culture reports. Only bacteria with symptoms of UTI should be treated with antibiotics to avoid the spread of drug-resistant pathogens in society. This practise can reduce the morbidity and mortality of diabetic patients suffering from urinary tract infections. Multi-resistant pathogens are a challenge for society.

Conflict of Interest

The authors declare that there was no conflict of interests.

References

1. Ojewole GS, Okoye FC, Ukoha OA (2015) *Torulopsis Glabrata*–Urinary Tract Infections in Diabetic Patients in Singapore. *Nephron Clin Pract* 4(7): 462-467.
2. Wafar RJ, Yakubu B, Lalabe BC (2017) Clinical Presentations and Epidemiology of Urinary Tract Infections. *J Clin Nephrol* 5(3): 1-8.
3. Oboh G, Akindahunsi AA, Oshodi AA (2002) Risk of genital and urinary tract infections associated with SGLT-2 inhibitors as an add-on therapy to metformin in patients with type 2 diabetes mellitus: A retrospective cohort study in Korea. *J Clin Nephrol* 15(5): 617-622.
4. John K (2012) Recto-Vaginal Colonization and Urinary Tract Infection by Group B Streptococcus in the Pregnant Diabetic Patient. *J Blood* 55(1): 111-121.
5. Abeke FO, Ogundipe SO, Dafwang II, Sekoni AA, Abu A (2008) Urinary Tract Infection in Children with Type I Diabetes. *J Clin Invest* 35(2): 217-223.
6. Joseph AM (1982) Gram-Positive Uropathogens, Polymicrobial Urinary Tract Infection, and the Emerging Microbiota of the Urinary Tract. *J Exp Ther Med* 30(1): 1-199.