

Diabetes and the prostate

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Abstract

Here we discuss the interactions between prostatic health and diabetes. Diabetes may be associated with changes in prostatic anatomy, physiology, clinical morbidity, and clinical outcomes. Certain glucose-lowering drugs may impact prostatic health, and some prostatic-tropic medications can influence glycaemic control. One should be vigilant for symptoms and signs of prostate health in diabetes.

Keywords: benign prostatic hyperplasia, erectile dysfunction, male gonad, male reproductive health, metformin, prostatic cancer, SGLT2i.

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Introduction

The prostate, a walnut-sized accessory male reproductive gland, is also a mechanical switch that facilitates urination and ejaculation. In Greek, the word 'prostaates' means protector or guardian. The prostate is both a source of endocrine-related secretions (it contributes to seminal fluid) and a target of hormones. Evaluation of the prostate is an important part of comprehensive diabetes assessment. Here, we list the salient aspects of prostate medicine, from a diabetes perspective.

Symptoms And Surrogate Markers

Erectile dysfunction (ED) and lower urinary tract syndrome (LUTS) are more common in men with diabetes, as is benign prostatic hyperplasia (BPH).^{1,2} Though reports are mixed, meta-analyses show that the risk of carcinoma prostate is lower in men with diabetes.³ It has been suggested that this may be because of lower biopsy rates. Men with diabetes are reported to have lower levels of testosterone as well as prostate specific antigen (PSA). However, outcomes of carcinoma prostate treatment are worse in them.⁴ Persons with ED need

higher doses of phosphodiesterase inhibitors if they have concomitant diabetes.

Prostatitis is also said to be more common in men with diabetes. There is a greater risk of acute bacterial prostatitis, and a higher chance of it becoming chronic. Symptoms of chronic pelvic pain syndrome (CPPS) may overlap with those of autonomic neuropathy. Asymptomatic inflammatory prostatitis is caused by immunological, neurological, endocrine and metabolic derangements, all of which can occur in diabetes. Non obese diabetic mice models are more prone to autoimmune prostatitis.⁵

Treatment

Metformin has been shown to have a favourable effect on outcomes of prostatic carcinoma. This effect is noted only after at least 2 years of therapy. This may be due to the insulin sparing effect of metformin. Metformin also reduces the proliferative function of androgen receptors.⁶

Hyperinsulinaemia promotes prostatic epithelial cell proliferation cancer cell plasticity, thus increasing tumour migration and invasiveness. However, earlier concerns that insulin glargine may be associated with increased risk of prostatic cancer have been proven to be unfounded.⁶ On the other hand, sulfonylurea treatment has been reported to have a longer progression-free survival in men with diabetes and prostatic cancer.⁶

There are in-vitro, animal and observational studies which have explored the effect of various other glucose lowering drugs on cancer, including prostatic cancer.^{7,8} No conclusion can be drawn regarding the benefit, or otherwise, of any of the existing drugs on development of prostatic cancer.

Sodium glucose cotransporter (SGLT)2 inhibitors are known to increase the risk of genital tract infections, especially fungal infection. Cases of other urological infections, such as Fournier's gangrene, have also been reported. Whether they increase the risk of prostatitis is unknown.

SGLT2i are being studied as neoadjuvant therapy in persons with high-risk or very high risk prostatic adenocarcinoma prior to radical prostatectomy. An ongoing study is evaluating the effect of four weeks

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therapy with dapagliflozin in such patients.⁹

The 5 α - reductase inhibitors, such as finasteride and dutasteride, that are used to manage BPH, are associated with a 30% increase in the risk of diabetes. Though no clinically significant impact has been reported on glycaemic control in persons with pre-existing diabetes, enhanced glucovigilance is prudent.

Summary

All men with diabetes should be screened for risk factors of prostatic disease. Clinical screening may be followed by biochemical and hormonal investigations, as well as imaging, if indicated. A high index of suspicion for prostatitis and CPPS should be kept in relevant clinical situations.

Persons on 5- α reductase inhibitor therapy must be watched carefully for the worsening of glucose control, any of the available glucose lowering drugs can be used, as per standard of care. Resolution of prostatic dysfunction and disease with help improve glycaemic control and quality of life.

Person with prostatic cancer and diabetes may benefit from metformin usage in the long run. Standard care should be followed for all prostatic ailments, along with comprehensive diabetes care.

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