

Diabetes and kidney disease: The impact of new medications

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INTRODUCTION

Diabetes is one of the leading causes of chronic kidney disease (CKD), a condition that occurs when the kidneys gradually lose their ability to function effectively. The relationship between diabetes and kidney disease is well-established: prolonged high blood sugar levels can damage the blood vessels in the kidneys, impairing their ability to filter waste from the body. Over time, this damage can lead to kidney failure, a serious condition that requires dialysis or a kidney transplant. However, recent advances in medical research and pharmacology have led to the development of new medications that have the potential to slow the progression of kidney disease in diabetic patients.

DESCRIPTION

Diabetes, particularly type 2 diabetes, is the most common cause of end-stage kidney disease (ESKD) in developed countries. High blood sugar levels over time can lead to diabetic nephropathy, a type of kidney disease that damages the tiny blood vessels in the kidneys. This damage reduces the kidneys' ability to filter waste products and regulate fluid balance in the body. As kidney function declines, patients may experience a buildup of waste products, leading to dangerous complications such as high blood pressure, heart disease, and fluid retention. Patients with diabetes are at an increased risk for developing kidney disease due to a combination of factors. These include poor blood sugar control, high blood pressure, obesity, and a genetic predisposition to kidney problems. When kidney disease progresses, the kidneys can lose the ability to excrete waste, leading to the accumulation of toxins in the body. If left untreated, this can result in kidney failure, requiring interventions like dialysis or even a kidney transplant. In recent years, several new classes of medications have emerged that can significantly improve the prognosis for diabetic patients with kidney disease. These medications not only help control blood sugar but also offer protective effects for the kidneys, reducing the risk of

progression to more severe stages of kidney disease. SGLT2 inhibitors, a class of drugs that includes empagliflozin, canagliflozin, and dapagliflozin, have shown significant promise in slowing the progression of kidney disease in people with diabetes. These medications work by blocking a protein in the kidneys (SGLT2) that reabsorbs glucose from urine back into the bloodstream. By inhibiting this protein, SGLT2 inhibitors cause excess glucose to be excreted through the urine, helping to lower blood sugar levels. However, their benefits extend beyond glucose control. Research has demonstrated that SGLT2 inhibitors also have a protective effect on the kidneys. These drugs reduce proteinuria (excess protein in the urine, a key marker of kidney damage) and improve kidney function, even in people who are already experiencing kidney disease. Studies have shown that patients taking SGLT2 inhibitors have a lower risk of developing end-stage kidney disease, requiring dialysis or a transplant. Additionally, SGLT2 inhibitors have been found to reduce the risk of cardiovascular events, which are common in people with diabetes and kidney disease. Another class of medications that have shown promise in both managing diabetes and protecting kidney function are GLP-1 receptor agonists, including drugs like liraglutide, semaglutide, and exenatide. These medications mimic the action of GLP-1, a hormone that helps regulate blood sugar by stimulating insulin secretion and inhibiting glucagon release.

CONCLUSION

The advent of new medications such as SGLT2 inhibitors, GLP-1 receptor agonists, and mineralocorticoid receptor antagonists has revolutionized the treatment of diabetes and kidney disease. These drugs not only improve blood sugar control but also offer significant renal protection, slowing the progression of kidney damage and reducing the risk of end-stage kidney disease. As research continues, these medications are becoming a cornerstone of treatment for diabetic patients at risk of kidney failure, offering hope for better long-term outcomes.

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