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The Dual Role of Glucagon-like Peptide-1 (GLP-1) Receptor Agonists in Prostate Cancer: From Diabetes to Oncology

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Abstract

Glucagon-Like Peptide-1 Receptor Agonists (GLP-1 RAs) are widely used in the management of type 2 diabetes due to their glucose-lowering effects and favorable safety profile. However, emerging evidence suggests that GLP-1 RAs may also have a dual role in prostate cancer, with both beneficial and potentially harmful effects. This article provides an overview of the current understanding of the dual role of GLP-1 RAs in prostate cancer, highlighting their potential as a therapeutic target in oncology.

Keywords: Peptide-1 Receptor • Therapeutic target • Oncology

Introduction

Prostate cancer is the second most common cancer in men worldwide and a leading cause of cancer-related deaths. The development and progression of prostate cancer are influenced by various factors, including hormonal signaling, inflammatory pathways, and metabolic alterations. GLP-1 RAs, such as exenatide and liraglutide, have been shown to modulate these pathways, raising interest in their potential use as adjunctive therapy in prostate cancer. GLP-1 RAs are a class of drugs that mimic the action of endogenous GLP-1, which is released from the gut in response to food intake. GLP-1 RAs stimulate insulin secretion, suppress glucagon release, and slow gastric emptying, leading to improved glycemic control in patients with type 2 diabetes. These drugs have also been associated with weight loss and cardiovascular benefits, making them attractive options for diabetes management. Several preclinical studies have suggested that GLP-1 RAs may have beneficial effects in prostate cancer [1,2].

Literature Review

GLP-1 RAs have been shown to inhibit the growth of prostate cancer cells in vitro and in vivo by modulating signaling pathways involved in cell proliferation and survival. Additionally, GLP-1 RAs have been reported to have anti-inflammatory effects, which may be beneficial in the context of prostate cancer, where inflammation plays a key role in tumor progression. Despite their potential benefits, some studies have raised concerns about the potential harmful effects of GLP-1 RAs in prostate cancer. GLP-1 RAs have been associated with an increased risk of pancreatitis and pancreatic cancer in patients with diabetes, although the causal relationship is still unclear. Additionally, GLP-1 RAs have been shown to promote the growth of certain types of cancer cells in preclinical studies, raising concerns about their safety in patients with cancer. Clinical studies investigating the effects of GLP-1 RAs in prostate cancer are limited, and the existing evidence is conflicting. Some studies have reported a beneficial effect of GLP-1 RAs on prostate cancer risk and progression, while others have found no association or even a potential harmful effect. Further research is needed to clarify the role of GLP-1 RAs in prostate cancer and to determine the optimal use of these drugs in patients with diabetes and prostate cancer [3,4] .

Discussion

GLP-1 RAs have shown promise as a potential therapeutic target in prostate cancer, but their dual role in the disease is not yet fully understood. While some studies suggest that GLP-1 RAs may have beneficial effects in prostate cancer by inhibiting tumor growth and inflammation, others raise concerns about their potential harmful effects, particularly in patients with diabetes. Further research is needed to clarify the effects of GLP-1 RAs in prostate cancer and to determine the optimal use of these drugs in patients with both diabetes and prostate cancer [5,6].

Conclusion

The dual role of GLP-1 receptor agonists in diabetes and oncology represents a fascinating convergence of metabolic and cancer research. While these agents have established benefits in managing T2DM, their potential as anticancer therapies, particularly in prostate cancer, is an emerging field of interest. Preclinical studies and early clinical evidence suggest promising anticancer effects, but further research is necessary to fully understand their mechanisms and optimize their use in oncology.

As the understanding of GLP-1 receptor agonists' role in cancer biology evolves, these agents may offer new hope for patients with prostate cancer, providing a novel therapeutic option that leverages their metabolic and direct anticancer properties. Future studies will be critical in validating these findings and translating them into clinical practice, potentially transforming the landscape of prostate cancer treatment. Clinical trials have consistently demonstrated the efficacy of GLP-1 receptor agonists in lowering HbA1c levels, with many patients achieving significant reductions. Furthermore, these agents have shown cardiovascular benefits, including reduced risks of major adverse cardiovascular events in high-risk patients. The comprehensive benefits of GLP-1 receptor agonists have solidified their role in the therapeutic arsenal against T2DM.

Acknowledgement

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Conflict of Interest

None.

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