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LITERATURE REVIEW

Association between phosphodiesterase type 5 inhibitors and prostate cancer: A systematic review

Association inhibiteurs de la Phosphodiesterase type 5 et cancer de la prostate : revue systématique de la littérature

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KEYWORDS

PDE5 inhibitors;
Prostate Cancer;
Radical
prostatectomy

Summary

Introduction. – We aim to assess the effect of phosphodiesterase type 5 inhibitors (PDE5I) on prostate cancer risk as well on biochemical recurrence after radical prostatectomy.

Method. – We performed a research using the following keywords "Phosphodiesterase type 5 inhibitors" and "Prostate cancer". Only trials examining the effect of PDE5I on prostate cancer risk and recurrence after radical prostatectomy were included.

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MOTS CLÉS

Inhibiteurs de la Phosphodiesterase type 5 ;
Cancer de la prostate ;
Prostatectomie totale

Results Seventeen preclinical trials and seven clinical trials were included. Preclinical studies demonstrate a pivotal role for PDE5I as a modulator of apoptosis preventing prostate carcinogenesis. The clinical benefit of PDE5I was not demonstrated. PDE5I use was not associated with decreased prostate cancer diagnosis in two retrospective cohort studies. Biochemical recurrence after radical prostatectomy was not lower (nor higher) in patients taking PDE5I in three retrospective case match studies.

Conclusion. — Based on this review, a change in our practice regarding pharmacological reeducation after radical prostatectomy is not justified.

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Résumé

Introduction. — Le but de cette revue est de revoir l'implication éventuelle des inhibiteurs de phosphodiesterase de type 5 (IPDE5) dans la genèse et la progression du cancer de la prostate.

Matériel et méthode. — Une recherche a été menée, en décembre 2017, sur la base des données usuelles en utilisant les mots-clés suivant : « Phosphodiesterase type 5 inhibitors » et « Prostate cancer ». Seuls les essais précliniques et cliniques examinant une association entre la prise des IPDE5 et la genèse et/ou la progression du cancer de la prostate étaient inclus.

Résultats. — Dix-sept études précliniques et sept études cliniques ont été retenues. Les études cliniques plaident en faveur d'un effet protecteur des IPDE5 contre le cancer de la prostate. Le bénéfice clinique de cette association est contradictoire. La synthèse des données montre l'absence d'un risque accru de récurrence biologique chez les utilisateurs. Il n'y a pas non plus une association entre la prise des IPDE5 et le risque de développer un cancer de la prostate.

Conclusion. — En se basant sur cette revue, une modification de notre pratique concernant la rééducation pharmacologique après prostatectomie totale n'est pas justifiée. Il n'y a pas non plus d'évidence à utiliser ce genre de traitement en prévention primaire ou secondaire dans le cancer de la prostate.

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Introduction

Prostate cancer is the most common cancer found in men. It represents nearly 26% of all male cancers. The prognosis of this cancer remains excellent and survival at 10 years for localized stages is around 90% [1]. Most often, treatment with curative intent consists of a radical prostatectomy with preservation of neurovascular bundles after taking into account the age of patient and the characteristics of the tumor [1]. However, this surgery is responsible for functional complications that impair the patient's quality of life. Erectile dysfunction is the most common encountered complication with an incidence varying between 25 and 75% depending on the series [2]. A postoperative management or early pharmacologic rehabilitation may be proposed and most often uses phosphodiesterase type 5 inhibitors (PDE5I). PDE5I leads to increased concentrations of cyclic guanosine monophosphate (cGMP) in the muscle cell inducing relaxation of smooth muscles in cavernous bodies promoting blood flow and cavernous tissue oxygenation. This oxygenation will prevent fibrosis in cavernous bodies, apoptosis of smooth muscle cells and veno-occlusive dysfunction [3]. Many clinical studies support this principle of early pharmacologic rehabilitation with an improvement of erections and quality of life in patients

after radical prostatectomy. Recently, the impact of taking PDE5I on the development, progression and recurrence of prostate cancer has been evoked. Several preclinical and clinical studies have evaluated this association with conflicting results. The purpose of this review is to identify the possible implication of phosphodiesterase type 5 inhibitors in the development and progression of prostate cancer.

Material and methods

Research Strategy

A web search was conducted during December 2017 based on Pubmed data, Embase and Cochrane Bookstore. The use of filters made it possible to limit the search to preclinical and clinical trials written in either English or French. The keywords used (MeSH language) were: "Phosphodiesterase type 5 inhibitors" and "Prostate cancer".

Selection of articles (PICO/PRISMA method)

The eligibility of articles was defined using the PICOS method, in concordance with the PRISMA recommendations:

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