

Association of the progesterone receptor gene polymorphism (*PROGINS*) with endometriosis: a meta-analysis

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Received: 20 January 2014 / Accepted: 2 June 2014 / Published online: 19 June 2014
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Abstract

Background Reported associations of progesterone receptor gene polymorphism (*PROGINS*) with endometriosis have been inconsistent.

Aim of the study To evaluate the association between the *PROGINS* polymorphism and the risk of endometriosis.

Methodology A meta-analysis of 12 published case-control studies with a total sample size of 3,321 (1,323 cases/1,998 controls) was performed. We estimated the risk (odds ratio [OR] 95 % confidence intervals) of endometriosis association with the *PROGINS* polymorphism.

Results An association between the presence of the variant allele and risk of endometriosis was found, more in the homozygous and recessive models (OR 1.41–1.43, $p = 0.15$ – 0.17), and less in the dominant and co-dominant models (OR 1.22, $p = 0.11$ – 0.15). Reanalysis without the studies whose controls deviated from the Hardy–Weinberg Equilibrium did not materially alter the dominant and co-dominant effects (OR 1.19–1.22, $p = 0.19$ – 0.32),

but exacerbated the homozygous and recessive effects (OR 1.59, $p = 0.09$). The subgroups based on geography showed increased risk associations, consistently significant in the European (OR 1.52–2.72, $p = 0.0008$ – 0.03) but not in the Brazilian studies, where ORs ranged from reduced (OR 0.70–0.74, $p = 0.54$ – 0.61) to increased (OR 1.11, $p = 0.75$) risks. Heterogeneity was confined in all comparisons to the dominant and co-dominant models ($I^2 = 38$ – 70 %), except in the European subgroup, which had zero heterogeneity ($I^2 = 0$ %) in all genetic models, as did all homozygous and recessive effects.

Conclusion This meta-analysis provides a comprehensive profile of the role of the *PROGINS* polymorphism in endometriosis by exploring the magnitude of the summary effects with modifier analysis. This magnitude is expressed with modulation or exacerbation of the summary effects, as defined by the parameters of the analysis. Thus, the results showed trend towards an increased risk of the variant *PROGINS* allele and susceptibility for the endometriosis.

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Keywords Progesterone receptor gene · *PROGINS* ·
Polymorphism · Endometriosis · Meta-analysis

Introduction

Endometriosis is a condition in which tissue that is histologically similar to the endometrium, with glands and/or stroma, grows outside the uterine cavity [1]. It is a chronic inflammatory disease and one of the most common benign gynecological disorders. Being multi-systemic, it can affect several organs, most commonly in the peritoneum and pelvis, especially the ovaries, and less in the recto-vaginal septum [2]. This results in pelvic pain, dysmenorrhea and infertility [3].