The Role of MicroRNA in Endometriosis

Aida Márquez de Haro, Biomedical Science Degree, Universitat Autònoma de Barcelona

1. Introduction

MicroRNAs (miRNAs) are 22 nucleotide single stranded non-coding RNA that bind to a target miRNA, mediating translational repression or its degradation. Therefore, they act like an inhibitor in the synthesis of some targeted proteins. They play an important role in the post-transcriptional gene regulation.

Endometriosis

The endometrium is a gynaecological disease characterized by the presence of endometrial tissue outside the uterine cavity. Its mechanism of pathogenicity and its aetiology are not known yet. The main and the worst symptom is infertility. About the origin of this pathology, several hypothesis have been postulated. The most accepted is the implantation theory, this one proposes that the endometrial cells arrive to their ectopic localizations through a retrograde menstruation and they can survive there because of the immunological status of the patients.

2. Materials and Methods

Scientific literature searched on Pubmed database has been selected by the publication date (from 2010 to 2015) and key words. From this database have been used reviews as well as papers. To have a first general vision at the beginning of the research a few books were consulted.

Key words: microRNA, miRNA, endometriosis, ovary.

3. Objectives

The aim of this review is to define and illustrate the function of the miRNAs in the pathogenesis, treatment and diagnostic of the endometriosis. But to achieve this objective the concept of miRNA and endometriosis should be explained.

4. Results

The endometrium is a dynamic tissue which undergoes a cyclic series of structural changes in preparation for embryo implantation. The cycle starts with an inflammatory reaction, which degrades the tissue, followed by rapid proliferation, angiogenesis, differentiation and tissue remodeling. Studies have shown the involvement of microRNAs in controlling the above processes, which are necessary for the physiological regeneration of the endometrium after each menstrual cycle.

5. Conclusions

- The relevance of microRNAs in the cellular mechanisms is increasing as the research advances. They are emerging as important regulators of diverse physiological and pathological processes.
- The alteration of miRNA expression profile could be the origin of a large number of pathologies.
- In this work, some of the miRNAs involved in the endometriosis’ pathogenesis are explained, but they are not the only ones which take part in this disease, the small molecules of RNA studied so far are plentiful.
- Given that the discovery of these molecules is relatively recent, their involvement in all the pathways described have not been fully demonstrated.

6. References

(1) Tongue SMCD, Pink CD, Hall SB. The role of microRNA in endometriosis and associated reproductive conditions. Hum Reprod Update. 2010; 16(2): 142-182.