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Circulating microRNAs as non-invasive biomarkers in endometriosis diagnosis – a systematic review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 January 2024 and was last updated on 16 January 2024.

INTRODUCTION

Review question / Objective Systematic review to summarize the literature on circulating miRNAs in patients with endometriosis

P: Patients with endometriosis

I: Assesment of circulating biomarkers

C: asymptomatic patients/negative laparoscopy

O: differential expression of circulating miRNAs.

Rationale The investigation of miRNAs in blood is minimal-invasive, and moreover, miRNAs in the circulation are stable and easily accessible. Therefore, they could serve as promising biomarkers for endometriosis.

Condition being studied Endometriosis.

METHODS

Search strategy We performed a systematic review according to the PRISMA guidelines [18]. The Pubmed database was searched using the Mesh terms 'Endometriosis' and 'MicroRNAs', with inclusion up to November 17th, 2022. Titles, abstracts and full papers were individually assessed for eligibility by two authors (AVH and EC). A flow chart of the literature search is provided in Figure 1. A total of 292 articles were found. All titles and abstracts were carefully read and assessed. After this initial screening 54 articles were sought for retrieval and assessed for eligibility. Inclusion criteria were: 1) article available in English; 2) humans as study subjects; 3) miRNA analysis performed in whole blood, plasma or serum; 4) prospective, retrospective or case-control studies; 5) published in a peer-reviewed

journal. Any ASRM stage [19] of endometriosis, any menstrual stage and any technique for miRNA expression analysis were allowed.

Participant or population Patients with endometriosis.

Intervention Assessment of circulating biomarkers.

Comparator Asymptomatic patients or negative laparoscopy for endometriosis.

Study designs to be included Prospective, retrospective or case-control studies.

Eligibility criteria 1) article available in English; 2) humans as study subjects; 3) miRNA analysis performed in whole blood, plasma or serum; 4) prospective, retrospective or case-control studies; 5) published in a peer-reviewed journal.

Information sources Pubmed + cross-referencing.

Main outcome(s) Some but limited overlap was found between the 32 articles included, with a total of 20 miR-NAs reported as dysregulated in endometriosis in two or more studies. MiR-17-5p was reported as dysregulated in six studies, followed by miR-451a and let-7b-5p in four studies and miR-20a-5p, miR-143-3p, miR-199a-5p and miR-3613-5p in three studies.

Quality assessment / Risk of bias analysis Not applicable.

Strategy of data synthesis No meta-analysis was possible.

Subgroup analysis Separate analysis for serum and plasma.

Sensitivity analysis Not performed.

Language restriction Articles in English.

Country(ies) involved Belgium.

Keywords endometriosis; miRNA, serum; plasma.

Contributions of each author

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Conceptualization, TD, AVH, EC and EV; methodology, AVH, DO, EC and EV; analysis of included studies, AVH, EC and EV; writing—original draft preparation, AVH, EC and EV; writing—review and editing, DO, CT, CM, PM and TD; visualization, AVH and EC; supervision, TD.