

ABSTRACT SUBMISSION FORM

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Exploring the role of sex and gender on health research



CHR D 2020: Abstract Submission Form

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Title

A systematic review of the therapeutic effect of extracellular vesicles (EVs) on asthma in pre-clinical models

Background

Asthma is the most common pediatric disease, and is characterized by chronic airway inflammation and airway hyperresponsiveness (AHR). Extracellular vesicles (EVs) are lipid bilayer-bound vesicles that are detected in all biofluids, function as primary cellular communicators and are studied as biomarkers of various diseases. While the role of EVs in the pathogenesis of asthma is emerging, a thorough investigation of the therapeutic effects of EVs in asthma has not been conducted.

Objective

Therefore, the objective of this systematic review is to analyze the recent evidence for the therapeutic effects of EVs on physiologic and biological outcomes of asthma in pre-clinical studies.

Methods

We searched 4 databases: Web of Science, EMBASE, MEDLINE, and Scopus (2015-2020). The primary outcomes were airway inflammation, AHR, and inflammatory markers and cell counts. Secondary outcomes were changes in airway remodeling, T cell apoptosis/Treg function, and macrophage polarization. Two reviewers independently selected studies based on eligibility criteria, and extracted data. Data were narratively synthesized and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results

From 907 records including grey literature, a total of 18 studies met all eligibility criteria. These studies used EVs derived from various sources, such as mice bronchoalveolar lavage fluid and human/murine mesenchymal stem cells, to treat asthma in human ex vivo cell models, and in vivo and in vitro mouse models of asthma. With EV treatment, there was a general decrease in all primary outcome variables. EV treatment affected secondary outcomes by airway remodeling (less fibrosis, collagen deposition),

decreasing pulmonary macrophage polarization, and enhancing T cell apoptosis/Treg function.

Conclusion

This systematic review provides evidence for a growing body of research literature that EVs can be effectively used as a therapeutic strategy to control asthma in pre-clinical models. It warrants further research into mechanisms underlying the effect of EVs on asthma.

Theme:

Clinical

Do you have a table/figure to upload?

No

Are you willing to participate in Goodbear's Den?

Yes

Presenter Status:

PhD Student

What was your role in the project?

Analyze Data

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