



Myeloperoxidase Deficiency: a potential cause of neutrophil anergy

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Background

Recurrent vulvovaginal candidiasis (RVVC) is an exceedingly common infection of the female reproductive tract that affects 75% of immunocompetent women during their childbearing years. A hallmark of RVVC is robust recruitment of neutrophils to the vaginal lumen that are unable to effectively kill the pathogen during infection, termed neutrophil anergy. Recently, significant research has been aimed at identifying the underlying pathophysiology of neutrophil anergy, of which one key factor appears to be a disabled respiratory burst.

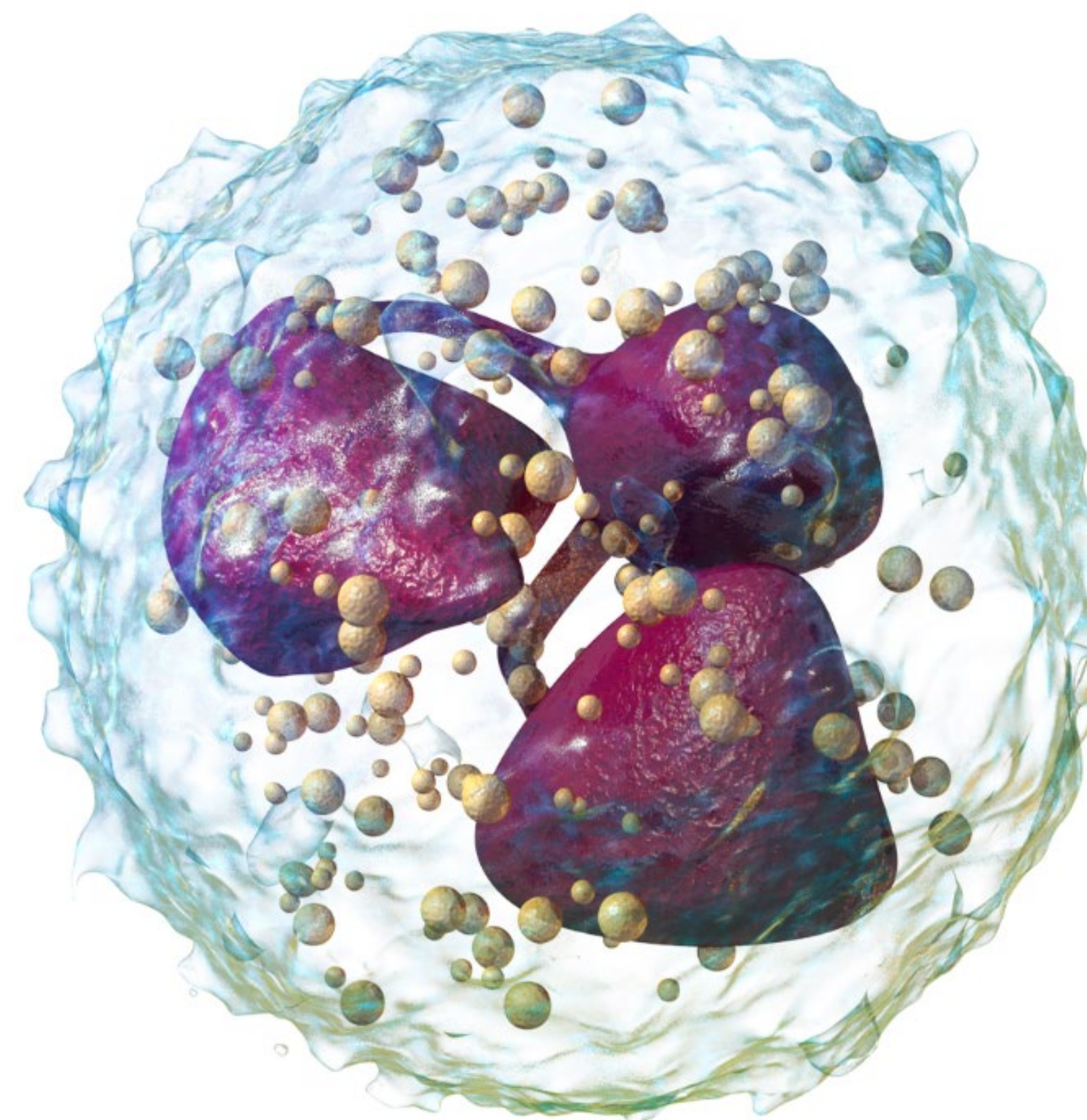
Aim

The purpose of this minireview is to highlight the significant advancements in the understanding of the pathogenesis of RVVC and neutrophil anergy, as well as to provide an overview of the current understanding of myeloperoxidase (MPO) deficiency, its role in the respiratory burst, and how it may relate to RVVC.

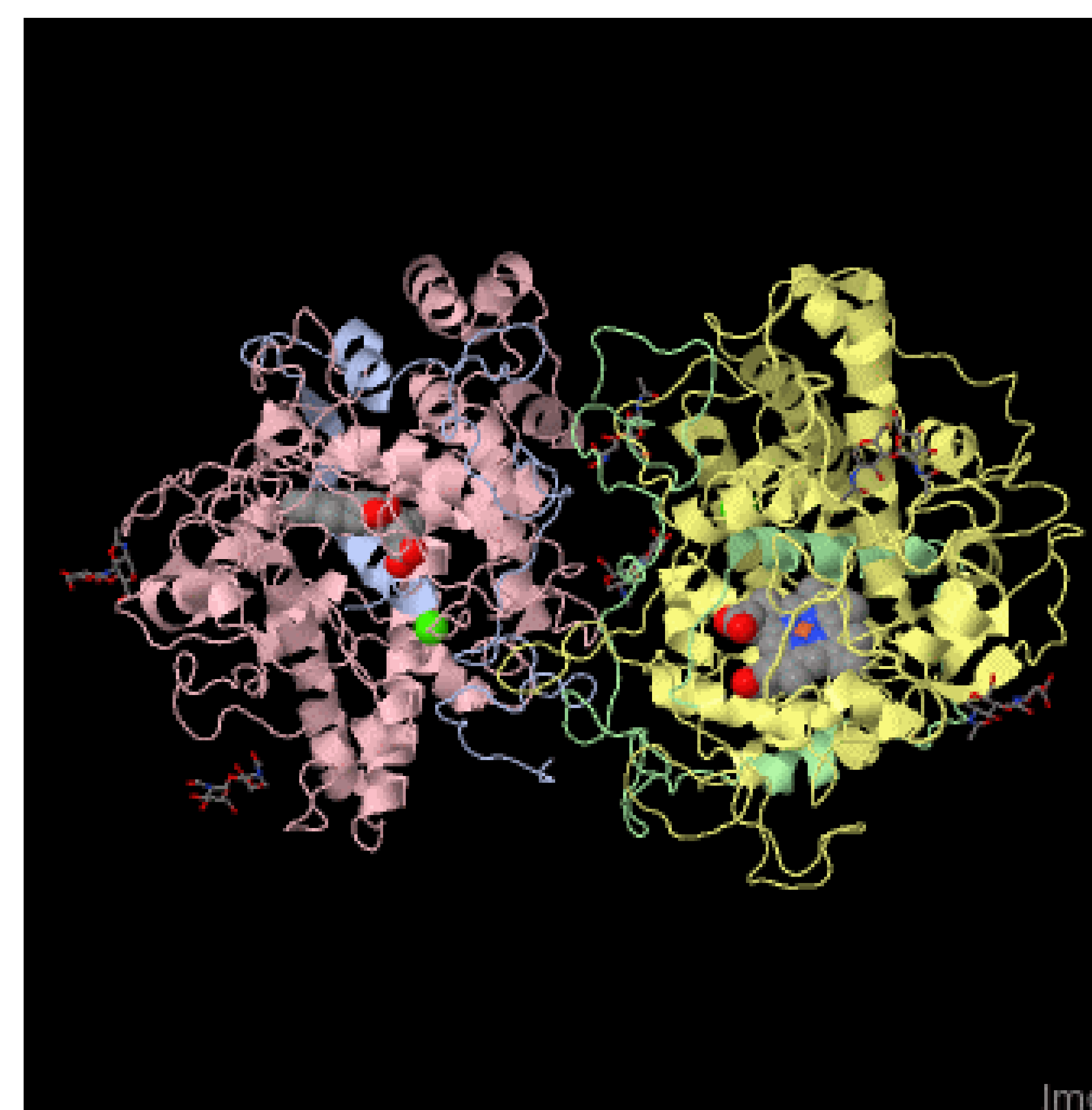
Methods

To identify potentially relevant studies, the following electronic databases were searched on MEDLINE, Embase, Web of Science Core Collection, and Cochrane Library. Database searches were not limited by species, age group of subjects, language, or publication date. All database search results were exported to and deduplicated in EndNote™ 20. The Yale MeSH Analysis Grid Generator was used to identify keywords, synonyms, and subject heading terms to develop the search strategies, based on five articles initially identified by the authors as being relevant to the topic. The relevant studies were then reviewed in detail for content related to the study question.

Neutrophil with Granulocytes



Myeloperoxidase Structure



Results

719 articles were retrieved in the initial literature review. Deletion of duplicate articles yielded 397 unique articles, all of which were then reviewed for content. 137 articles remained after excluding articles based on a series of criteria (language barrier, relevance to mucocutaneous candidiasis and vulvovaginal candidiasis, relevance to OB/GYN care, as well as foundational concepts related to innate and adaptive immunity in the context of candida infection). Of all 137 articles, only two discussed MPO deficiency as a potential cause of neutrophil anergy in the context of chronic recurrent vulvovaginal candidiasis.

Discussion

MPO deficiency is exceedingly common, heterozygosity estimated at more than 1 out of 50. RVVC is also exceedingly common, effecting 1 out of every 10 women during their reproductive years. The question remains whether the unique environment of the female reproductive tract unmasks the otherwise asymptomatic phenotype of MPO deficiency. Obstetric and Gynecological clinicians encountering patients with recurrent vulvovaginal candida infections not adequately explained by other mechanisms should consider a multidisciplinary approach to include Immunology for evaluation of MPO deficiency.

References

Over 1,100 published articles were reviewed during this project, 181 of which are referenced in the final manuscript. For a complete reference list, please send a request to Kathryn.cataldo@cuanschutz.edu