INPLASY

PREVALENCE OF CELIAC DISEASE AND CELIAC DISEASE ANTIBODIES IN IMMUNE MEDIATED INFLAMMATORY DISORDERS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023100100

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 October 2023 and was last updated on 31 October 2023.

INTRODUCTION

Review question / Objective We aim to conduct a systematic review and meta-analysis of the available literature to estimate the prevalence of Celiac Disease and Celiac Disease specific antibodies among patients with Systemic Erythematosus Lupus (SLE), primary Sjogren Disease (pSS), and Systemic Sclerosis (SSc).

Condition being studied Celiac disease (CeD) is a multi-organ immune-mediated disease that occurs in subjects with predisposing human leukocyte antigen haplotypes (HLA) in conjunction with other genetic and/or environmental factors . CeD affects the small bowel and predisposes patients to nutrient malabsorption, resulting in a variety of symptoms including but not limited to chronic diarrhea, anemia, short stature, and abdominal discomfort. It can also eventually trigger serious conditions like lymphoproliferative cancer, depression, osteoporosis, liver disease and neurological disorders. CD has increased worldwide over time from 0.6% in 1991 to 2000 to 0.8% between 2001 and 2016. Furthermore, a recent study estimated the global seroprevalence of CD at 1.4%. Besides, CD is 1.5 times more common in females than in males, and approximately twice more common in children than in adults.

It has been studied that the abnormal immunological response triggered by gluten can lead to the creation of autoantibodies, that can affect different organ systems, and explain the association between CeD and immune mediated inflammatory disorders (IMID) including Systemic Erythematosus Lupus (SLE), primary Sjogren Disease (pSS), and Systemic Sclerosis (SSc) (A). Moreover, it has been hypothesized that this interplay of genetic and environmental factors leading to the presence of several organ and non-organ specific autoimmune diseases is termed “shared autoimmunity concept” and could explain the coexistence of multiple immune related diseases in an individual. In this sense, some studies have described high prevalences of CeD in

these autoimmune conditions with percentages ranging from 3-7%.

METHODS

Search strategy A comprehensive search of multiple electronic databases including PubMed, MEDLINE (OVID), Cochrane Library, Embase, Scopus and Web of Science has been conducted:
1 Autoimmune Diseases/ 56366
2 (autoimmun* or auto-inmun* or autoaggressive or autoantibod*).ti,ab,kf. 233166
3 1 or 2 248989
4 Connective Tissue Diseases/ 7199
5 (connective tissue adj2 (defect* or disease* disorder* or dysplasia)).ti,ab,kf. 436
6 4 or 5 7528
7 exp Lupus Erythematosus, Systemic/ 65353
8 (systemic lupus or lupus erythemato* or Libman-Sacks Disease).ti,ab,kf. 68783
9 (antidna or anti-DNA or "anti-dsDNA" or "anti-ds DNA" or "dsDNA autoantibod*" or "anti-double stranded DNA").mp. 8254
10 7 or 8 or 9 87685
11 Sjogren's Syndrome/ 14209
12 (Sjogren* or Sjoegren* or sicca syndrom*).ti,ab,kf. 18963
13 ("anti-SSA*" or "anti-SS-A*" or "anti-SSB" or "SS A antibod*" or "anti-Ro SSA" or "anti-Ro52" or "anti-Ro-52" or "Ro antibod*" or "anti-Ro autoantibod*").mp. 3653
14 11 or 12 or 13 22760
15 exp "scleroderma, systemic"/ 22534
16 (scleroderma or sclerodermia or crest syndrom* or ((systemic or progressive or diffuse) adj2 (sclerosis or SSc))).ti,ab,kf. 32790
17 DNA Topoisomerases, Type I/ 5103
18 ("anti-centromere" or "anticentromere" or "ACA antibody" or "anti scl 70" or topoisomerase* or "anti-TOPO I" or "kinetochore proteins" or "RNA polymerase enzyme" or "anti-RNAP III").mp. 25271
19 15 or 16 or 17 or 18 59373
20 10 and 14 and 19 1493
21 3 and (10 or 14 or 19) 36527
22 Celiac Disease/ 21532
23 exp Glutens/ 9439
24 (celiac or coeliac or gluten or glutens).ti,ab,kf. 36710
25 (transglutaminase* or anti-transglutaminase*).mp. 10670
26 ("Anti-TGM" or "anti-tTG2" or "TGM6*" or "anti-TGM6*" or "IgG anti-tissue" or "IgG anti-tTG" or "IgA anti-tissue" or "IgA anti-tTG" or "Antigliadin" or "anti gliadin" or "anti-DGP" or "serum immunoglobulin A (IgA) endomysial" or "IgA tissue transglutaminase" or " IgA tTG2" or "IgA endomysial" or "IgA and IgG deamidated gliadin peptide").mp. 1628
27 22 or 23 or 24 or 25 or 26 50727
28 (6 or 20 or 21) and 27 405.

Participant or population Adults >18 years old with an Immune mediated inflammatory disorder such as Systemic Erythematosus Lupus (SLE), primary Sjogren Disease (pSS), and Systemic Sclerosis (SSc).

Intervention None.

Comparator General population (without immune mediated diseases).

Study designs to be included All studies except case reports, case series, commentaries, experimental in vitro studies and letters to the editor.

Eligibility criteria Exclusion criteria: Patients with other concomitant gastrointestinal disorders.

Information sources Multiple electronic databases including PubMed, MEDLINE (OVID), Cochrane Library, Embase, Scopus and Web of Science.

Main outcome(s) To estimate the pooled prevalence of Celiac disease antibodies in patients with SLE, Sjogren's and SSc and the overall seroprevalence of celiac disease antibodies in these patients.

Quality assessment / Risk of bias analysis An independent reviewer will assess the quality of the studies using the Newcastle-Ottawa Scale.

Strategy of data synthesis Data collected will expressed in proportions or percentages with the corresponding confidence interval (CI).

Subgroup analysis The meta-analysis will be performed using the Freeman-Tukey Double Arcsine Transformation to calculate pooled prevalences. Heterogeneity was assessed using the Higgins I2 index. I2 values of 0%, less than 25%, 25% to 49% and more than 50% denoted no, low, moderate, and high heterogeneity, respectively.

Sensitivity analysis None.

Country(ies) involved United States, Peru.

Keywords Celiac disease ; Systemic Erythematosus Lupus ; Sjogren Disease ; Systemic Sclerosis.

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