

Brief Report on the Effect of Environment on Prevalence of Auto Immune Diseases in Veterans

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Abstract

The role of environment has been widely speculated to play a role in the pathogenesis of auto-immune diseases such as Lupus, Rheumatoid Arthritis, Psoriasis, etc. However, no definitive linkage has been found so far. In order to explore this possible association, a retrospective study was undertaken in veterans who had fought in various wars ranging from WWII to Gulf War and the prevalence of auto-immune diseases ascertained. This was compared to the prevalence in civilian populations. Except for auto-immune thyroiditis, no difference was found in veterans who had been exposed to different environments and between them and civilians in the US. A larger study will be needed to explore this lack of association.

Keywords: Lupus; Rheumatoid arthritis; Psoriasis; Auto-immune thyroiditis; Auto immune diseases

Methods

A retrospective chart analysis was done in patients at the VA Medical Center at Wilkes Barre, Pennsylvania. The prevalence of auto-immune diseases in Veterans who fought in WWII (Europe and Asia Pacific), Korean War, Vietnam Conflict, and the Persian Gulf War was compared to the prevalence of these diseases in the US population. The prevalence was also compared by gender and, for the WWII Vets, between those who served in Europe versus those who served in Asia Pacific. The diseases studied included psoriasis, psoriatic arthritis, inflammatory bowel disease, rheumatoid arthritis, lupus, myositis, auto-immune thyroiditis, vasculitis, ankylosing spondylitis, pemphigus, bullous dermatitis, systemic sclerosis, autoimmune hepatitis, Sjogren's Syndrome, reactive arthritis, polymyalgia rheumatic, and sarcoidosis.

Introduction

It is estimated that the prevalence of auto-immune disease is 3.2% in the general population [1]. Autoimmune diseases are multi-factorial in nature, with genetics, environmental, and other as yet undetermined determinants playing a role. In order to assess the role of environment, a retrospective study was done on US Veterans at the VA Medical Center in Wilkes Barre. The rationale was that US servicemen and women have had exposure to diverse socio-economic environments across the globe, ranging from well developed countries to developing ones. They also have exposure to diverse ecosystems, ranging from deserts to mountains to tropical jungles. Thus, they are a good group to analyze the effect of the environment on the prevalence of auto-immune diseases and compare it to US population as a whole.

	Time/No	Time/No	Time/No	Time/No	Time/No	Time/No
	WW II/	Korea/	Post-Korea/	Vietnam/	Post-Vietnam/	Persian Gulf/
	12,121	14,934	7,525	38,447	8,351	10,862
Disease						
RA	30	41	28	87	14	2
SLE	0	3	0	4	6	4
AIT	1	0	0	9	1	8
PBC	0	0	0	1	0	0
Vasculitis	2	2	3	6	0	0
Myositis	1	0	0	4	0	0
Sarcoid	0	0	0	2	0	0

AS	1	1	3	10	0	3
BP	1	2	0	1	2	1
Scleroderma	1	1	3	0	1	3
Polymyalgia	4	4	2	6	0	0
AIH	0	0	0	1	0	0
Sjogrens	3	0	0	6	3	0
Reactive	0	2	0	2	0	0
Arthritis						
Psoriasis	4	6	2	26	3	5
Psoriatic Arthritis	2	3	2	25	5	10
IBD	0	1	0	8	1	3
AIT: Auto Immune Thyroiditis PBC: Primary Biliary Cirrhosis AS: Ankylosing Spondylitis BP: Bullous Pemphigoid AIH: Auto immune Hepatitis IBD: Crohn's and Ulcerative Colitis						

Table 1: Number of patients with auto-immune diseases stratified by period and disease.

Results

There were 37,373 patients in the database, of whom 441 had auto-immune diseases, a prevalence of 1.177%, which is about half that seen in the general population. The most common auto-immune disease was rheumatoid arthritis. The highest prevalence was in female veterans who fought in the Korean War, at 1.3%. The lowest was in the Persian Gulf War, at 0.03% in males and 0.06% in females, perhaps reflecting the demographic age group of these patients. It ranged from 0.2% - 0.6% in the other groups. This prevalence is less than that seen in the civilian population where the prevalence is around 0.5 - 1% [2]. The prevalence of all other auto-immune diseases was similarly lower than in the US population as a whole. Females had a higher prevalence than males. There was no difference in prevalence of any auto-immune disease between veterans of different wars except for auto-immune thyroiditis, which was higher in those who served in the Persian Gulf War. While no cases were found in any other war, the prevalence was 0.4% in men and 0.6% in women who served in the Persian Gulf War (Table 1).

Discussion and Conclusion

In this brief retrospective study, no clear environmental influence was seen in veterans with auto-immune diseases. This encompassed various theatres of war, including different climate, topography and socio-economic exposures. Unfortunately, there was not enough detail in patient charts to ascertain and analyze dietary habits or religious affiliation. Nevertheless, in this study, the prevalence of auto-immune diseases in this veteran population was found to be lower than that seen in the US population suggesting that if anything, the military environment is protective against auto-immune diseases. A larger study would be needed to explore this observation further.

References

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