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Letter

Hypothyroidism in Patients with Psoriasis or Rosacea: A Large Population Study

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Abstract

Hypothyroidism is a common disease, and there may be a link between hypothyroidism and inflammatory skin disease. The purpose of this study is to assess whether hypothyroidism is more prevalent in psoriasis or rosacea patients. We utilized a large claims-based database to analyze rates of hypothyroidism in patients with psoriasis and rosacea compared to other patients with skin diseases. Participants were patients between 20-64 years of age with ICD-9 diagnosis codes for psoriasis, rosacea, and hypothyroidism. We found that rates of hypothyroidism in rosacea and psoriasis patients were similar to rates of hypothyroidism in those without rosacea or psoriasis.

Keywords: epidemiology, prevalence, thyroid disease, psoriasis, hypothyroidism, rosacea

Introduction

Hypothyroidism has an estimated prevalence of 4-5% in the United States [1, 2]. Hypothyroidism is more often present in women, and levels of thyroid autoantibodies increase with age within the female population [1, 3]. The purpose of this study is to test the hypothesis that hypothyroidism is more common in patients with psoriasis or rosacea.

There may be a link between hypothyroidism and psoriasis. Psoriasis has been associated with a number of auto-antibodies, including antibodies against the thyroid gland [4]. Similar to hypothyroidism, rosacea is a common disease that is most frequently diagnosed in women over the age of 30, with highest prevalence in patients 40-60 years old [5]. Both rosacea and psoriasis are inflammatory skin diseases treated by dermatologists.

Methods

Data were obtained from the Humana database, a large dataset of claims and reimbursed costs that encompasses records on over 18 million patients between 2007 and 2014. Our study population consisted of 3,944,465 patients with ICD-9 dermatological diagnoses, defined as diagnoses with codes between 680.0 and 709.9. We searched by ICD-9 code for patients in the United States with diagnoses of psoriasis (696.1), rosacea (695.3), and hypothyroidism (244.9). The sample was narrowed to patients between ages 20-64 because of the high prevalence of these diseases within this age group. We analyzed disease prevalence by gender and age using 5-year intervals between ages 20-64.

Results

There were 1,667,943 patients between 20-64 years of age. Rosacea and hypothyroidism were more prevalent in women than in men, but disease prevalence was roughly equivalent across genders for psoriasis (Table 1).

Table 1. Prevalence of hypothyroidism, psoriasis, and rosacea in men and women 20-64 years of age.

Disease	Total # Patients (any age)	Number of Patients Age 20-64		
		Total	Men	Women
Hypothyroidism	914,627	263,123	65,920 (25.1%)	197,203 (74.9%)
Psoriasis	140,439	60,759	29,476 (48.5%)	31,283 (51.5%)
Rosacea	165,130	74,061	20,531 (27.7%)	53,530 (72.3%)

The rate of hypothyroidism in psoriasis and rosacea patients did not greatly differ from the prevalence of hypothyroidism in patients with other dermatologic diseases; 13.8% of patients without psoriasis and rosacea had hypothyroidism, whereas hypothyroidism was diagnosed in 17.5% and 19.7% of psoriasis and rosacea patients, respectively (Figure 1).

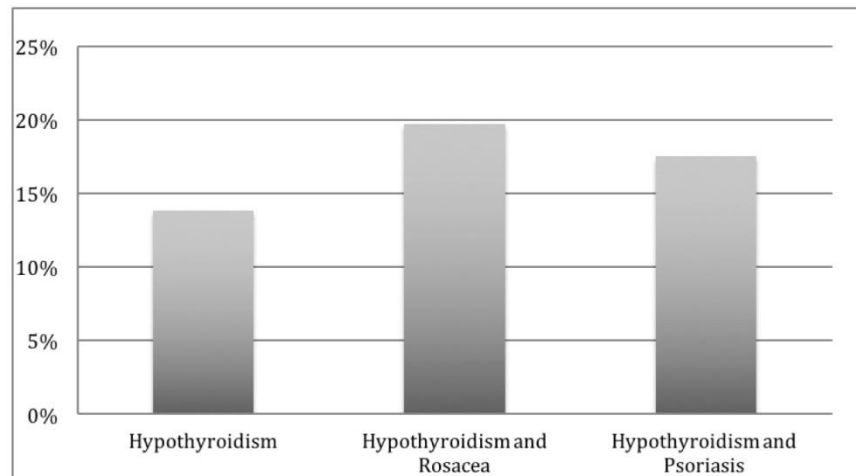


Figure 1. Prevalence of hypothyroidism in patients 20-64 years of age with and without psoriasis and rosacea.

Looking at overall prevalence, the rate of hypothyroidism appears higher in patients with rosacea compared to those without. But rosacea patients tend to be older and hypothyroidism increases with age. After accounting for age (table 2), there is little difference in hypothyroidism rates between patients with or without rosacea.

For both women and men in our study population, the percentage of psoriasis and rosacea patients with hypothyroidism increased with age in parallel to the increase of hypothyroidism in the rest of the population (Tables 2, 3).

Table 2. Prevalence of hypothyroidism in women by 5-year age intervals between ages 20-64 in patients with and without psoriasis and rosacea.

Age (years)	%of psoriasis patients with hypothyroidism	%of rosacea patients with hypothyroidism	Baseline % of patients with hypothyroidism
20 to 24	1.3%	1.0%	2.0%
24 to 29	3.3%	2.6%	3.6%
30 to 34	5.4%	5.9%	5.6%
35 to 39	8.4%	10.8%	8.2%
40 to 44	12.0%	16.1%	11.2%
45 to 49	18.4%	22.8%	15.6%
50 to 54	27.0%	29.4%	21.9%
55 to 59	35.1%	32.6%	27.4%
60 to 64	33.5%	27.6%	31.7%

Table 3. Prevalence of hypothyroidism in men by 5-year age intervals between ages 20-64 in patients with and without psoriasis and rosacea.

Age (years)	%of psoriasis patients with hypothyroidism	%of rosacea patients with hypothyroidism	Baseline %of patients with hypothyroidism
20 to 24	1.0%	0.6%	1.5%
24 to 29	2.1%	1.5%	2.1%
30 to 34	3.8%	2.6%	3.5%
35 to 39	7.1%	6.4%	5.6%
40 to 44	10.9%	11.3%	8.9%
45 to 49	16.2%	17.4%	13.8%
50 to 54	26.7%	27.4%	20.7%
55 to 59	37.8%	38.5%	28.6%
60 to 64	37.8%	39.1%	35.8%

Discussion

Hypothyroidism occurs in patients with skin diseases, but is no more common in patients with psoriasis or rosacea. The rates of hypothyroidism in our study were higher than those previously cited because we studied patients in an age group with high prevalence of thyroid disease who were integrated well enough into the healthcare system to have a dermatological diagnosis [1]. The high prevalence of hypothyroidism in female psoriasis and rosacea patients was explained by higher rates of hypothyroidism within the overall population.

This study had important limitations, typical of a claims database study. We used ICD-9 claims in the patient's history to diagnose hypothyroidism, rosacea, and psoriasis. Therefore, our study and data are subject to coding errors. We could not assess severity of disease, only the presence of disease. Further confirmation of diagnosis could have been made through searching for a second ICD-9 code in the patient's history.

In conclusion, hypothyroidism is not more common in patients with psoriasis or rosacea than in individuals with other dermatologic disorders.

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Conflict of Interest

The Center for Dermatology Research is supported by an unrestricted educational grant from Galderma Laboratories, L.P. Dr. Feldman is a speaker for Janssen and Taro. He is a consultant and speaker for Galderma, Stiefel/GlaxoSmithKline, Abbott Labs, Leo Pharma Inc. Dr. Feldman has received grants from Galderma, Janssen, Abbott Labs, Amgen, Stiefel/GlaxoSmithKline, Celgene and Anacor. He is a consultant for Amgen, Baxter, Caremark, Gerson Lehrman Group, Guidepoint Global, Hanall Pharmaceutical Co Ltd, Kikaku, Lilly, Merck & Co Inc, Merz Pharmaceuticals, Mylan, Novartis Pharmaceuticals, Pfizer Inc, Qurient, Suncare Research and Xenoport. He is on an advisory board for Pfizer Inc. Dr. Feldman is the founder and holds stock in Causa Research and holds stock and is majority owner in Medical Quality Enhancement Corporation. He receives Royalties from UpToDate and Xlibris. Ms. James and Dr. Hill have no conflicts to disclose.