

# Cancer is seen more in older female patients with psoriasis : A cross-sectional study in 1551 patients

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## Abstract

**Aim:** The aim of this study was to establish the potential risk of the development of malignancy in the patients with psoriasis.

**Material and Methods:** A retrospective analysis of psoriasis cases between January 2017 to August 2018 attending the dermatology clinic at Karabuk Research and Training Hospital was carried out. Patients with psoriasis were screened whether they have any malignant disease and associated chronic disease including diabetes mellitus and hypertension by using hospital data system. Suspected cases regarding psoriasis or malignant disease were excluded. Findings were compared according to demographic characteristics of the patients.

**Results:** A total of 1551 patients with psoriasis was evaluated in the study time. 30 patients (22 women, 8 men) were found to have malignancy. The most commonly seen malignancy was stomach cancer in women and prostate cancer in men. 2% of patients with psoriasis had cancer. This rate was 2.5% in female patients and 1% in male patients ( $p < 0.005$ ). The mean age of psoriatic patients with cancer was 58.3 years, higher than 41.9 years which is the mean age of all psoriasis patients in the study ( $p < 0.005$ ). The cancer cases were more common in psoriasis patients having diabetes and/or hypertension in comparison with those without diabetes and/or hypertension ( $p < 0.005$ ).

**Conclusion:** Cancer was found to be more common in female patients with psoriasis particularly in older age group. In addition, diabetes and hypertension have significant contribution to occurrence of the malignancy in patients with psoriasis.

**Keywords:** Cancer; Gender; Psoriasis.

## INTRODUCTION

Psoriasis is an autoimmune dermatosis with a prevalence of 3-6% in the community. Dysregulation of immunity has been shown to play a role in the pathogenesis of psoriasis, as well as the disorder in the proliferation and differentiation of keratinocytes in the skin (1).

Metabolic syndrome is an endocrine disorder in which cardiovascular risk factors such as elevated blood glucose, abdominal obesity, dyslipidemia and hypertension are present together. It has been reported that the development of neoplastic diseases is high in patients with metabolic syndrome (2).

In recent years, attention is drawn to the apparent association between psoriasis and metabolic syndrome. Therefore, it is suggested that the likelihood of malignancy in psoriasis patients is higher than in healthy individuals

(3-4). There are many studies regarding malignancy risk in patients with psoriasis (5-7).

In this study, we investigated the frequency of malignant diseases and their association with age, gender and comorbidities, encountered in patients with psoriasis in a single dermatology clinic.

## MATERIAL and METHODS

Our study was carried out in Karabuk Training and Research Hospital Dermatology Clinic. The files of all patients who were diagnosed as psoriasis between January 2017 and July 2018 were reviewed. Those patients who also had any malignant disease were selected. The demographic characteristics of the patients with psoriasis and malignancy were examined.

The age, sex and comorbidities of those patients were noted. During screening, patients whose malignancy or

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psoriasis records were not confirmed were excluded from the study.

Descriptive statistics were used for demographic characteristics of the patients such as age and gender. Chi Square and Students t- test were used to compare categorical data between two groups.  $p < 0.05$  was considered statistically significant.

The study was approved by the ethics review board of Karabuk University.

## RESULTS

Among the 1551 patients (877 women and 674 men) with psoriasis aged 10 to 83 within the specified time, 30 patients were found to have any malignant disease. 22 of those patients with both psoriasis and any cancer were female. Other eight were male patients (Table 1).

Gender	Cancer + patients	Cancer – patients	Total
Female	22 (2.5%)	855	877 (56.5%)
Male	8 (1.1%)	666	674 (43.5%)
Total	30 (1.9%)	1521	1551

**\*Female patients with psoriasis have more malignant diseases compared to males ( $p < 0.005$ )**

Overall, 2% of all psoriasis cases had a neoplastic disorder. This rate was found to be 2.5% in female patients while 1% in male patients, a significant difference between genders ( $p < 0.005$ ).

Table 2 shows all malignant diseases seen in psoriasis patients in the study.

Types of cancer	Number of patients
Stomach	4
Nonmelanoma skin	4
Breast	3
Thyroid	3
Connective tissue	2
Colorectal	2
Lung	2
Brain	2
Lymphoma	2
Oral	1
Endometrium	1
Leukemia	1
Larynx	1
Urinary bladder	1
Cervix	1

Figure 1 illustrates age distribution of the patients. The mean age of all patients was 41.9 years (42 for women, 41.8 for men). The mean age of the patients with malignancy was 58 years. Patients with cancer were older ( $p < 0.005$ ). The mean age of female and male patients with cancer was similar (58 vs 60) ( $p = 0.61$ ).

Of the 30 patients with cancer, 24 (80%) had diabetes and /or hypertension. In 1521 patients with no cancer diagnosis, this number was 367 (24%). Psoriasis patients associated with diabetes and/or hypertension had significantly more cancer than those without diabetes and hypertension ( $p < 0.005$ ) (Table 3).

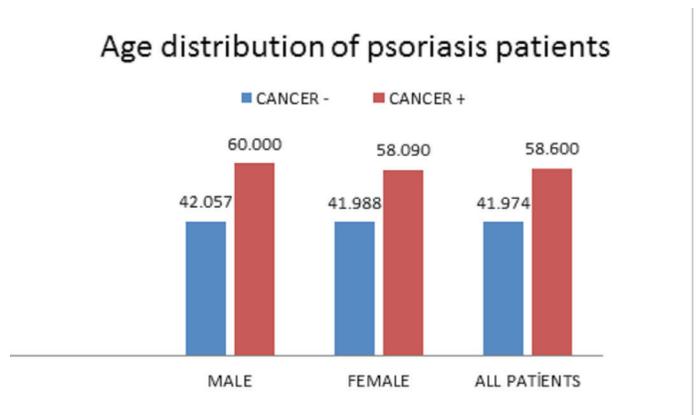


Figure 1. Age distribution of all patients according to gender \*Patients with cancer were older ( $p < 0.005$ )

Diabet ± Hypertension	Cancer + patients	Cancer – patients
Present	24	367
Absent	6	1154
Total	30	1521

**\*Diabetes and/or Hypertension significantly influence cancer occurrence in patients with psoriasis ( $p < 0.005$ )**

## DISCUSSION

The cross-sectional study showed at a rate of 2% malignant disease in patients with psoriasis. This ratio included four patients diagnosed with nonmelanoma skin cancer. In general, women, the elderly patients and those with diabetes and / or hypertension had more cancer.

Psoriasis is an autoimmune dermatosis of unknown cause. The association of psoriasis and metabolic syndrome was noted (1). It is known that the incidence of malignancy in metabolic syndrome has increased (8).

Metabolic syndrome is a marker of an imbalance in the body. Dyslipidemia, glucose elevation, obesity and hypertension are known to disrupt immunity (9). Considering the fact that cancer cells are formed in the body at all times and immunity destroys these cells, it is inevitable that impaired immunity increases the risk of cancer.

Oxidative stress is increased in psoriasis patients. This event is one of the indicators of the immune disorder that triggers the neoplastic process in the body (10,11).

In addition to the immunity disorder seen in psoriasis patients, they are also at risk of malignancy due to the treatments used. Systemic treatment methods such as methotrexate, cyclosporine and PUVA are preferred in patients with severe psoriasis. It is known that such treatments increase the risk of cancer in long-term use (12,13).

In our study, 3 of 30 cancer patients had a history of methotrexate, 2 puva and 1 cyclosporine use. Since only the records of our hospital can be taken into consideration, it is possible that some other patients we followed might have used such medications in other centers in previous years. Given the epidemiological rate of the types of cancer seen, it is impossible to argue that this number may be directly related to medication or disease. The risk of malignancy of topical steroids used in almost all psoriasis patients is still controversial (14).

Chronic hypertension and diabetic patients have been reported to have a high risk of malignancy (15,16). Some studies have shown that hypertension is more common in patients with psoriasis (17). When we consider these three clinical findings under the roof of metabolic syndrome, we need to meet the coexistence normally. Adding malignancy to these is not surprising. As a matter of fact, in the retrospective analysis of our patients, hypertension and / or diabetes were present in 24 of 30 patients with malignancy. In addition, it should be kept in mind that the increased incidence of cancer increases with age (18). At the same time, diabetes and hypertension are more common diseases in older ages (19,20). In our patients, it is possible that the incidence of cancer is age-related but not related to psoriasis itself.

The most common cancers were gastric cancer and nonmelanoma skin cancer as 4 cases in this study. In the cohort study of Frent, the most common psoriasis-associated cancer was nonmelanoma skin cancer (21). Egeberk et al. reported a modest increase in nonmelanoma skin cancer incidence in psoriasis patients whereas a study by Paradisi et al showed that nonmelanoma skin cancer is less common in psoriasis patients who are not receiving phototherapy compared to a group of non-dermatological patients (22,23).

In a study by Prizment, it was found that lung, colon and general cancer types were more common in female psoriasis patients over the age of 65 years, and only colon cancer was found to be significantly higher by evaluating variables such as smoking and body mass index (24). In comparison to our study, this study had an extremely high sample group. Women patients with psoriasis were found to have, similar to us, more malignancy in this study.

In a South Korean study, it was reported that certain organ cancers such as prostate and thyroid were more

common in psoriasis patients when they were cleared of the confounding factors (25). Thyroid cancer was among the mosts in our study.

Although cancer is more common in men (26), the presence of a significant number of patients in our study group in female psoriasis patients may be the result of the low number of patients in the study group and the result of the severity of the metabolic syndrome in female psoriasis patients. Although there are only 30 patients with cancer, there is a need for a 3-fold difference between men and women. As a similar observation apart from ours and Prizment study (24), Dai et al. reported the risk of nonmelanoma skin cancer in women with psoriasis and reported increased risk of squamous cell carcinoma of skin (27).

Our study had some limitations. The main limitation was the lack of adjustment for potential confounding factors. Because of a cross-sectional design of our study, we could not evaluate factors such as genetic and body mass index which affect the malignancy. In addition, because we were working on a record basis, there might be patients diagnosed as cancer outside our center so unrecorded in our database. A number of 1551 psoriasis patients is not a big number to be able to evaluate a rational cancer risk in such disease. In addition, comparison with a group of patients without psoriasis would be more efficient. Nevertheless, we think that it is valuable in terms of being a first study done in our country despite its small size and other lacks.

## CONCLUSION

In conclusion, we observed cancer in elderly patients in our psoriatic patients. It was remarkable that female patients were much more than male patients and, association of diabetes and / or hypertension has influenced malignancy occurrence in psoriasis patients.

Psoriasis patients aged 55 years or older, and having diabetes and / or hypertension should be monitored more closely regarding malignancy development.

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## REFERENCES

1. Ogawa E, Sato Y, Minagawa A, et al. Pathogenesis of psoriasis and development of treatment. *J Dermatol* 2018;45:264-72.
2. Yunusova NV, Kondakova IV, Kolomiets LA, et al. The role of metabolic syndrome variant in the malignant tumors progression. *Diabetes Metab Syndr* 2018;12:807-12.
3. Gisondi P, Fostini AC, Fossà I, et al. Psoriasis and the metabolic syndrome. *Clin Dermatol* 2018;36:21-8.
4. Kimball AB, Sundaram M, Cloutier M, et al. Increased prevalence of cancer in adult patients with psoriasis in the united states: a claims based analysis. *J Drugs Dermatol* 2018;17:180-6.

5. Rademaker M, Rubel DM, Agnew K, et al. Psoriasis and cancer. An australian/new zealand narrative. *Australas J Dermatol* 2019;60:12-8.
6. Reddy SP, Martires K, Wu JJ. The risk of melanoma and hematologic cancers in patients with psoriasis. *J Am Acad Dermatol*. 2017;76:639-47.
7. Chiesa Fuxench ZC, Shin DB, Ogdie Beatty A, et al. The risk of cancer in patients with psoriasis: a population-based cohort study in the health improvement network. *JAMA Dermatol* 2016;152:282-90.
8. Mendonça FM, de Sousa FR, Barbosa AL, et al. Metabolic syndrome and risk of cancer: which link? *Metabolism*. 2015;64:182-9.
9. Eheim A, Medrikova D, Herzig S. Immune cells and metabolic dysfunction. *Semin Immunopathol* 2014;36:13-25.
10. Emre S, Metin A, Demirseren DD, et al. The relationship between oxidative stress, smoking and the clinical severity of psoriasis. *J.Eur.Acad.Dermatol.Venereol* 2013;27:e370-75.
11. Reuter S, Gupta SC, Chaturvedi MM, et al. Oxidative stress, inflammation, and cancer: how are they linked? *Free Radic Biol Med* 2010;49:1603-16.
12. Stern RS; PUVA Follow-Up Study. The risk of squamous cell and basal cell cancer associated with psoralen and ultraviolet A therapy: a 30-year prospective study. *J Am Acad Dermatol* 2012;66:553-62.
13. Pouplard C, Brenaut E, Horreau C, et al. Risk of cancer in psoriasis: a systematic review and meta-analysis of epidemiological studies. *J Eur Acad Dermatol Venereol* 2013;27:36-46.
14. Arellano FM, Wentworth CE, Arana A, et al. Risk of lymphoma following exposure to calcineurin inhibitors and topical steroids in patients with atopic dermatitis. *J Invest Dermatol* 2007;127:808-16.
15. Kobayashi D, Kuriyama N, Hirano K, et al. Malignancy incidences by glycemic control among diabetic patients. *Endocr Connect* 2018. Dec 1. Pii ec 0355
16. Radišauskas R, Kuzmickienė I, Milinavičienė E, et al. Hypertension, serum lipids and cancer risk: a review of epidemiological evidence. *Medicina (Kaunas)* 2016;52:89-98.
17. Cohen AD, Weitzman D, Dreiherr J. Psoriasis and hypertension: a case-control study. *Acta Derm venereol* 2010;90:23-6.
18. White MC, Holman DM, Boehm JE, et al. Age and cancer risk: a potentially modifiable relationship. *Am J Prev Med* 2014;46:S7-15.
19. International Diabetes Federation. *IDF Diabetes Atlas, 6th edition*. Brussels, Belgium: International Diabetes Federation, 2013.
20. Arici M, Turgan C, Altun B, et al. Hypertension incidence in Turkey (HinT): a population-based study. *J Hypertens* 2010;28:240-4.
21. Frenzt G, Olsen JH. Malignant tumours and psoriasis: a follow-up study. *Br J Dermatol* 1999;140:237-42.
22. Egeberg A, Thyssen JP, Gislason GH, et al. Skin cancer in patients with psoriasis. *J Eur Acad Dermatol Venereol* 2016;30:1349-53.
23. Paradisi A, Didona B, Tabolli S, et al. Reduced frequency of non-melanoma skin cancer in 72,739 patients with psoriasis: a retrospective study. *Eur J Dermatol* 2017;27:359-62.
24. Prizment AE, Alonso A, Folsom AR, et al. Association between psoriasis and incident cancer: the Iowa's Women's Health Study. *Cancer Causes Control* 2011;22:1003-10.
25. Lee JH, Kim HJ, Han KD, et al. Cancer risk in 892 089 patients with psoriasis in Korea: a nationwide population-based cohort study. *J Dermatol* 2019;46:95-102.
26. Ferlay J, Steliarova-Foucher E, Lortet-Tieulent J, et al. Cancer incidence and mortality patterns in Europe: estimates for 40 countries in 2012. *Eur J Cancer*. 2013;49:1374-403.
27. Dai H, Li WQ, Qureshi AA, et al. Personal history of psoriasis and risk of nonmelanoma skin cancer (NMSC) among women in the United States: a population-based cohort study. *J Am Acad Dermatol* 2016;75:731-5.