



Age distribution of psoriasis clinical types: A single center study

Psoriasis klinik tiplerinin yaşa göre dağılımı: Tek merkezli bir çalışma

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Abstract

Background and Design: Psoriasis is a multifactorial, chronic inflammatory skin disease. Clinical and epidemiological parameters in psoriasis may vary in different age groups. The age of the patient is significant in the choice of treatment. We therefore aimed at performing a general and comparative assessment of epidemiologic and clinical parameters of patients with psoriasis according to four age groups.

Materials and Methods: We assessed the files of patients with psoriasis who applied to our clinic between 2006 and 2016. Sex, age, duration of disease, family history of psoriasis, clinical types, psoriasis area and severity index, nail and joint involvement, associated comorbidities and dermatoses, and treatments for psoriasis were obtained from the patient files. They were then evaluated comparatively in four age groups: 0-18 years, 19-40 years, 41-65 years and over 65 years.

Results: We enrolled 374 patients (54.3% male, 45.7% female). Age of the patients were between 6 years and 85 years (mean: 42.17±18.54 years), with 16% of the patients between the age of 0-18, 26.7% between 19-40, 45.5% between 41-65 and 11.8% above 65. Guttate psoriasis and generalized pustular psoriasis were observed more frequently in females (p=0.001). Plaque psoriasis was the most observed clinical type in all age groups, while between the age of 0-18 years, the frequency of guttate psoriasis (31,7%) increased significant compared to that in other age groups (p<0.001). Nail involvement in 41-65 years occurred in 64.7% of patients, while it was 18.3% in the 0-18 age group (p<0.001). Frequency of joint involvement was identified in 1.7% of the 0-18 age group, 4% of 19-40 age group, 8.8% of 41-65 age group and 9.1% of the age group above 65 years (p<0.001). Frequency of comorbidities significantly increased with increase in age (p<0.001).

Conclusion: In this study, age was noted as a significant factor in distribution of clinical types, nail and joint involvement, comorbidities and selection of treatment modalities.

Keywords: Psoriasis, clinical types, comorbidity, comparison, different age groups

Öz

Amaç: Psoriasis multifaktöriyel, kronik inflamatuvar bir deri hastalığıdır. Hastalığın klinik ve epidemiyolojik özellikleri farklı yaş gruplarında değişkenlik gösterir. Tedavi seçiminde hastanın yaşı önemli bir faktördür. Bu çalışmada psoriasis hastalarında epidemiyolojik ve klinik özelliklerin 4 farklı yaş grubunda karşılaştırmalı olarak değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Kliniğimize 2006-2016 yılları arasında başvuran psoriasis hastalarının dosyaları geriye dönük olarak incelendi. Hasta dosyalarından cinsiyet, yaş, hastalık süresi, aile öyküsü, klinik psoriasis tipi, psoriasis alan ve şiddet indeksi, tırnak ve eklem tutulumu, eşlik eden komorbiditeler ve dermatozlar, kullanmakta oldukları tedaviler not edildi. Veriler 0-18, 19-40, 41-65 ve 65 yaş üzeri olmak üzere dört yaş grubunda karşılaştırmalı olarak değerlendirildi.

Bulgular: Toplam hasta sayısı 374 (%54,3 erkek, %45,7 kadın) idi. Hastaların yaşları 6-85 (ortalama: 42,17±18,54) arasındaydı. Hastaların %16'sı 0-18 yaş, %26,7'si 19-40 yaş, %45,5'i 41-65 yaş arasındaydı ve %11,8'i 65 yaşın üzerindeydi. Guttat psoriasis ve jeneralize püstüler psoriasis erkeklere göre kadınlarda daha sık görüldü (p=0,001). Plak tip psoriasis tüm yaş gruplarında en çok görülen klinik tip iken, 0-18 yaş arasında guttat psoriasis sıklığı (%31,7) diğer yaş gruplarına göre istatistiksel olarak anlamlı artmış saptandı (p<0,001). Tırnak tutulumu 41-65

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yaş grubunda %64,7 iken 0-18 yaş grubunda %18,3 idi ($p<0,001$). Eklem tutulum sıklığı 0-18 yaş grubunun %1,7'sinde, 19-40 yaş grubunun %4'ünde, 41-65 yaş grubunun %8,8'inde ve 65 yaş üstünün %9,1'inde saptandı ($p<0,001$). Yaşla birlikte komorbidite sıklığının anlamlı olarak arttığı görüldü ($p<0,001$).

Sonuç: Bu çalışmada yaşın, psoriazisin klinik tiplerin dağılımı, tırnak ve eklem tutulumu, komorbiditeler ve tedavi yöntemlerinin seçiminde istatistiksel olarak anlamlı bir faktör olduğu saptanmıştır.

Anahtar Kelimeler: Psoriazis, klinik tipler, komorbidite, kıyaslama, farklı yaş grupları

Introduction

Psoriasis is a chronic inflammatory skin disease which genetic factors play role in its etiopathogenesis. Its prevalence is reported at 2% of the world's population^{1,2}. Although the disease can be seen at any age, the clinical features and severity of the disease vary in across different age groups^{3,4}. Studies have shown that psoriasis makes two peaks; first between the ages of 30-39 years, and the second between the ages of 50-59 years or 60-69 years⁵. There are different clinical subtypes of the disease including plaque, guttate, palmoplantar, erythrodermic, generalized pustular, palmoplantar pustular and inverse psoriasis⁶. Although plaque psoriasis is the most frequent type in children, guttate psoriasis is more common than in adults⁷.

Since the clinical and epidemiological parameters and treatment choice in psoriasis vary across different age groups, we aimed at evaluating the clinical and epidemiological features of psoriasis comparatively in different age groups.

Materials and Methods

Between January 2006 and January 2016, data of 374 patients proven histopathologically who applied to our clinic were analyzed retrospectively. Approval from the Ege University Faculty of Medicine Local Ethical Committee was granted (approval number: 17-1/8, date: 09.05.2017). Informed consent was obtained. Sex, age, duration of disease, family history of psoriasis, clinical types of psoriasis, psoriasis area and severity index (PASI), nail and joint involvement, accompanying comorbidities and dermatoses, and treatment of psoriasis were noted from the patient files. Data were evaluated comparatively in four age groups (in years): 0-18, 19-40, 41-65 and over 65.

Statistical Analysis

Data was analyzed using IBM SPSS Statistics 21.0 (IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) software. In all analyses, significance level was set at 0.05. Average, standard deviation, median, minimum, maximum, frequency and ratios were been displayed, while categorical variables with each other was examined with the "Pearson's chi-square" test.

Results

Amongst the 374 psoriasis cases evaluated in our study, 54.3% (203 patients) were male and 45.7% (171 patients) were female. Regarding age distribution, 16% (60 patients) of the patients were between 0-18 years, 26.7% (100 patients) were between 19-40 years, 45.5% (170 patients) were between 41-65 years, and 11.8% (44 patients) were over 65 years (Table 1). The mean disease duration was 16.18±12.98 (minimum-maximum: 1-62) years. The mean age of onset of psoriatic lesions was 25.98±14.56 (minimum-maximum: 3-70) years. In 33.4% (125 patients) of patients, at least one of the first- or second-degree relatives had a history of psoriasis. In 41.7% in the 0-18 age group, 37%

in the 19-40 age group, 30.6% in the 41-65 age group, and 25% over the age of 65 had a family history of psoriasis. The difference between these across the groups were not significant ($p=0.219$).

Nail and joint involvement were observed in 53.7% (201 patients) and 6.4% (24 patients) of patients respectively. Moreover, nail involvement was also observed in 83.3% of patients with joint involvement, the frequency of nail involvement was 46.4% in patients without joint involvement. This difference was significant ($p<0.001$). Nail involvement was significant in terms of different age groups ($p<0.001$). Thus, 64.7% of patients in the 41-65 age group had nail involvement, while the 0-18 age group had 18.3% nail involvement.

There was a significant relationship between the frequency of nail involvement and clinical types of psoriasis ($p<0.001$). Nail involvement was observed in all patients with generalized pustular psoriasis and erythrodermic psoriasis. However, none of the patients with inverse psoriasis had nail involvement. Joint involvement was observed in 40% of patients with erythrodermic psoriasis, in 50% of patients with generalized pustular psoriasis, but not palmoplantar psoriasis, scalp psoriasis and inverse psoriasis. This relationship between joint involvement and clinical types was found to be significant ($p<0.001$).

The most common clinical type of psoriasis in patients was the plaque type (67.9%), followed by the guttate type (9.1%). The least common was inverse psoriasis (1.6%) (Table 2). Guttate psoriasis and generalized pustular psoriasis were significantly more common in women ($p=0.001$). Although the most common clinical type was plaque psoriasis in all age groups, the frequency of guttate psoriasis (31.7%) between 0 and 18 years old was significantly higher compared to that of other age groups ($p<0.001$).

Amongst the patients included in the study, plaque psoriasis was observed in 75.9% of men and 58.5% of women, while guttate psoriasis was observed in 14% of women and 4.9% of men. In addition, generalized pustular psoriasis was more common in women (5.8%) than in men (1%). This relationship between clinical psoriasis type and gender was significant ($p=0.001$).

When we compare the frequency of clinical types in different age groups, the most common form in the 0-18 age group is plaque psoriasis, but the frequency of guttate psoriasis is significantly higher than in other age groups ($p<0.001$). While 90.9% of patients over 65 years had plaque type psoriasis; guttate, palmoplantar pustular and generalized pustular forms were not observed at all. This relationship between different age groups and clinical types of the disease was significant ($p<0.001$).

The mean PASI was 10.45±7.02. While the highest PASI values were between the ages of 41-65 (11.94±6.88), the lowest values were observed in the 0-18 age group (6.28±4.63) (Table 3).

The most common accompanying dermatoses were seborrheic dermatitis (3.2%) and vitiligo (2.7%). Also, rosacea occurred in 6 patients, alopecia areata in 4 patients, cutaneous vasculitis in 3 patients, chronic urticaria in 3 patients, pemphigus vulgaris, bullous

Table 1. Average age, disease onset and disease duration of all patients and average age according to sex

	Average (min-max) of all patients	Average (min-max) of female patients	Average (min-max) of male patients
Age	42.17±18.54 (6-85)	42.53±17.52 (6-77)	41.86±19.38 (6-85)
Age of disease onset	25.98±14.56 (3-70)	-	-
Duration of psoriasis	16.18±12.98 (1-62)	-	-

min: Minimum, max: Maximum

Table 2. Distribution of psoriasis clinical types in all patients and by gender and age

Psoriasis type	No (%)	Male, n (%)	Female, n (%)	0-18 years, n (%)	19-40 years, n (%)	41-65 years, n (%)	>65 years, n (%)
Plaque	254 (67.9)	154 (75.9)	100 (58.5)	28 (46.7)	57 (57.0)	129 (75.9)	40 (90.9)
Guttate	34 (9.1)	10 (4.9)	24 (14.0)	19 (31.7)	12 (12.0)	3 (1.8)	0 (0)
Palmoplantar	18 (4.8)	12 (5.9)	6 (3.5)	2 (3.3)	6 (6.0)	9 (5.3)	1 (2.3)
Scalp	25 (6.7)	14 (6.9)	11 (6.4)	8 (13.3)	12 (12.0)	4 (2.4)	1 (2.3)
Palmoplantar pustular	15 (4.0)	6 (3.0)	9 (5.3)	0 (0)	5 (5.0)	10 (5.9)	0 (0)
Generalized pustular	12 (3.2)	2 (1.0)	10 (5.8)	0 (0)	4 (4.0)	8 (4.7)	0 (0)
Erythrodermic	10 (2.7)	3 (1.5)	7 (4.1)	1 (1.7)	3 (3.0)	5 (2.9)	1 (2.3)
Inverse	6 (1.6)	2 (1.0)	4 (2.3)	2 (3.3)	1 (1.0)	2 (1.2)	1 (2.3)

Table 3. PASI values observed in different age groups

Age	Average	Min-max	SD
0-18	6.28	1.4-15.8	4.63
19-40	9.83	1.2-30.8	6.60
41-65	11.94	1.2-28.3	6.88
>65	9.45	1.4-37.2	8.11

PASI: Psoriasis area and severity index, Min: Minimum, max: Maximum, SD: Standard deviation

pemphigoid, atopic dermatitis, and discoid lupus erythematosus were detected in one patient. There was no significant difference in terms of comorbidities in different age groups ($p=0.382$). Among comorbidities, hypertension was the most common (24.3%) (Table 4). Smoking rate was 44.7% among patients. There was a strong relationship (93.3%) between smoking and palmoplantar pustular psoriasis. This relationship between clinical type and smoking was found to be significant ($p<0.001$). Among the comorbidities, diabetes mellitus (DM) was not observed in the 0-18 age group, while it was 30% ($n=51$) in the 41-65 age group and 72.7% ($n=32$) in the group over 65 years. Moreover, in the age group over 65, hypertension was seen in 70.5% ($n=31$), coronary artery disease in 22.7% ($n=10$), and dyslipidemia in 40.9% ($n=18$) of patients. Obesity was more frequently observed between the ages of 0-18 and 41-65. These differences in the frequency of comorbidities depending on age were also significant ($p<0.001$).

Topical treatment (corticosteroids, analogs of vitamin D, and keratolytics) was given to all patients included in the study, methotrexate (44.7%) was the most common systemic treatment. Phototherapy was applied to 24.9% of patients (Table 5). Phototherapy was used in the treatment of 66.7% of patients with palmoplantar psoriasis, 44.1% of patients with guttate psoriasis and 22.8% of patients with plaque psoriasis. This relationship between phototherapy and clinical types was significant ($p<0.001$). Systemic treatment (methotrexate, acitretin and cyclosporine) was given to 59.8% of these patients. Among the

Table 4. Frequency of comorbidities accompanying psoriasis

Comorbidities	no	%
Hypertension	91	24.3
Diabetes mellitus	84	22.5
Thyroid dysfunction	49	13.1
Obesity	45	12.0
Dyslipidemia	39	10.4
Coroner artery disease	23	6.1

Table 5. Treatment distributions

Treatment type	no	%
Topical treatment	374	100.0
Phototherapy	93	24.9
Methotrexate	167	44.7
Acitretin	147	39.3
Cyclosporine	74	19.8
Infliximab	32	8.6
Adalimumab	37	9.9
Etanercept	33	8.8
Ustekinumab	13	3.5

systemic agents, methotrexate (44.7%) was used most frequently. The most frequently used systemic treatment agent between the ages of 0-18 was acitretin (20%). The most frequently used systemic treatment agent in other age groups was found to be methotrexate ($p<0.001$). A statistically significant difference was observed between the use of phototherapy ($p=0.008$), methotrexate ($p<0.001$), cyclosporine ($p=0.004$) and acitretin ($p=0.001$) in different age groups. Biological agent was used in 19.2% of the patients. Adalimumab was used in 9.9%, etanercept in 8.8%, infliximab in 8.6%, and ustekinumab in 3.5%. There was no significant difference across age groups in terms

of biological agent use ($p>0.05$). Biological agents were used only in patients with plaque type, erythrodermic type and generalized pustular psoriasis. No significant relationship was observed between biological agents and clinical types ($p>0.05$).

Discussion

The clinical and epidemiological features of psoriasis patients were evaluated across different age groups.

In our study, the majority of patients were between the ages of 41-65. Aykol et al.⁸ reported that the majority of psoriasis patients in their study were between 20-40 years of age. Tovar-Garza et al.⁹ revealed that 11% of the patients were between the ages of 0-18. This rate was 16% in our study. Phan et al.¹⁰ stipulated that the rate of patients over the age of 70 was 9.5%, and over the age of 65 years was 11.8% in our study.

Aykol et al.⁸ found that the age of onset of the disease was 26.7 ± 14.6 years in males and 24.2 ± 15.3 years in females. In our study, the age of onset of the disease was 25.39 ± 13.47 years in males and 26.68 ± 15.77 years in females. There were differences between parameters such as gender, average age and age of onset of disease, since the aims in the studies in the literature are different from each other. Therefore, the number and groups of patients were not similar.

The most common clinical type in our study was plaque psoriasis with a ratio of 67.9%. The most common type is the plaque type in other studies, with incidence ranging from 51% to 90%^{8,11,12}. In our study, guttate psoriasis was seen in 9.1% of the patients. In other studies, this rate varies^{8,11,12}. Erythrodermic psoriasis was 2.7% and generalized pustular psoriasis was 3.2% of the patients in our study. Chen et al.¹¹ found the erythrodermic psoriasis rate as 0.7% and generalized pustular psoriasis rate as 1.2%. Aykol et al.⁸ found 1.4% and 1.1%, respectively. The most common form between 0-18 years was plaque psoriasis (46.7%), while the frequency of guttate psoriasis (31.7%) was significantly higher than that of other age groups ($p<0.001$) when we evaluated the frequency of clinical types in different age groups comparatively. Silverberg¹³ stated that the frequency of guttate psoriasis was 30% in the pediatric group. In Tovar-Garza et al.⁹, plaque psoriasis (68%) was the most common clinical type between the ages of 0-18 years, similar to our study, whilst guttate psoriasis (12.5%) was found in less patients compared to our study. In this study, the frequency of inverse psoriasis (4%) was also high, similar to our study. In addition, Toscano et al.¹⁴ from Italy indicated that plaque psoriasis (%66.7) was the most common type in the pediatric group; moreover, guttate psoriasis (10.6%) was significantly higher in the pediatric age group. Pourchot et al.¹⁵ from France found the frequency of plaque psoriasis as 41.6% and guttate psoriasis as 16.6% among pediatric patients. The high frequency of the guttate psoriasis type in childhood compared to adulthood could be due to *Streptococcal* infections which may be involved in the etiology of psoriasis and more frequent in this age group.

In our study, generalized pustular and palmoplantar pustular psoriasis were most frequently seen between the ages of 41 and 65, while these clinical types were never seen between the ages of 0-18 and over the age of 65. The most common clinical type in patients over the age of 65 was plaque psoriasis (90.9%). This relationship between different age groups and clinical types of the psoriasis was found to be significant

($p<0.001$). Phan et al.¹⁰ found that while plaque psoriasis (67.8%) was the most common clinical type as in their study in patients over the age of 70, the frequency of guttate psoriasis (6.4%), palmoplantar psoriasis (7.9%) and inverse psoriasis (7.9%) were also significantly higher. Kassi et al.¹⁶ included 47 patients over 60 years of age, and the most common clinical type was plaque psoriasis (51.1%), but the as well as the frequency of inverse psoriasis (12.8%).

In our study, nail involvement was seen in 53.7% of patients. In other studies, rates ranged from 16% to 37.6%^{8,11,17}. The most common nail involvement was seen in the 41-65 age group. The difference in the frequency of nail involvement across age groups and the relationship between the clinical type of psoriasis and the frequency of nail involvement were significant ($p<0.001$). Frequency of nail involvement was 18.3% between the ages of 0-18. In the studies where pediatric patients were evaluated, the nail involvement rate was reported at 5%⁹ and 32.3%¹⁵. The frequency of nail involvement in psoriasis patients varies widely and can be affected by parameters such as clinical type, genetic characteristics of patients, joint involvement and disease severity. In our study, nail involvement was observed in 83.3% of patients with joint involvement, while the rate of nail involvement in patients without joint involvement was 46.4%. and it was significant ($p<0.001$). This rate was reported at 97% in Iran, 92.5% in India and 58.3% in Turkey^{8,18,19}.

Joint involvement in our study was seen in 6.4% of patients. This was consistent with 5.6%⁸ and 6.2%¹¹ reported in the literature. The frequency of joint involvement was more common in generalized psoriasis and erythrodermic psoriasis. Hypertension was the most common comorbidity in our study population. DM was found in 22.5%, obesity in 12%, dyslipidemia in 10.4%, and coronary artery disease in 6.1% of patients. In other studies, the rates of the comorbidities were reported as; hypertension 16.4-42.1%^{11,20,21}, hyperlipidemia 13-45.6%^{11,20,21}, DM 7.8-17.4%^{11,20,21}, obesity 14.3%²⁰ and cardiovascular diseases 17.7%²¹, coronary artery disease 2.4%¹¹.

In our study, a significant difference was found in the frequency of comorbidities in different age groups ($p<0.001$). While obesity was observed in 13.3% of patients in the 0-18 age group, other comorbidities were not observed. The second peak of obesity was observed between the ages of 41-65 years (20%). The rates of comorbidities in the patients above 65 years; DM 72.7%, hypertension 70.5%, dyslipidemia 40.9%, coronary artery disease 22.7%. Phan et al.¹⁰ found 61.6% of patients over 70 years old had hypertension, 48.6% dyslipidemia, 22.4% DM, and 19.8% cardiovascular disease history. In the same study, the proportion of comorbidities reported in patients under the age of 70 was found to be significantly lower¹⁰. In our study, obesity was observed more frequently in patients between the ages of 0-18 and 41-65 compared to other age groups, whereas the frequency of other comorbidities increased significantly with age ($p<0.001$).

From some studies, the rate of smoking among patients with psoriasis was 28.2-44.7%^{8,11,17}. In our study, the rate of smoking was found to be 44.7%. Ozden et al.²² investigated the role of environmental factors in patients with psoriasis under the age of 18 and stated that smoking at home posed a risk for pediatric psoriasis. In our study, while smoking was low in patients with guttate psoriasis (20.6%), it was high in the patients with palmoplantar pustular psoriasis (93.3%). This relationship between clinical type and smoking was significant ($p<0.001$).

Menter et al.²³ reported that the most frequently prescribed systemic agent was methotrexate in 42.5% of patients with psoriasis. In a study involving 32 dermatologists from European countries, it was reported that methotrexate was prescribed in 44% of patients, acitretin 32% and cyclosporine 16%²⁴. Equally, the most commonly used systemic treatment agent was methotrexate in our study.

Amongst age groups, 66.6% of those aged 0-18 used only topical treatment. Phototherapy was applied to 8.3% of patients in the 0-18 age group and 31.8% of patients over 65 years of age. The most frequently used systemic treatment agent between the ages of 0-18 was acitretin (20%). Methotrexate was used at the rate of 10% between the ages of 0-18, 37% between the ages of 19-40, 61.8% between the ages of 41-65, and 43.2% over the age of 65.

Phan et al.¹⁰ found that 37.9% of patients with psoriasis over 70 years of age need a systemic treatment agent and 14.6% of them use biological agents. These values were significant when compared with the group of patients under the age of 70¹⁰. We found no significant difference in different age groups in terms of biological agent use ($p>0.05$).

Biological agents were used only in patients with plaque type, erythrodermic type and generalized pustular psoriasis. No significant relationship was observed between biological agents and clinical types ($p>0.05$).

In our study, phototherapy was applied to 66.7% of patients with palmoplantar psoriasis, 44.1% of patients with guttate psoriasis and 22.8% of patients with plaque psoriasis. This relationship between phototherapy and clinical types was significant ($p<0.001$).

Methotrexate was never used in clinical types such as inverse psoriasis and scalp psoriasis. Hausteiner and Rytter²⁵ from Germany examined 157 patients using methotrexate retrospectively, 36% of patients had plaque type, 23% had erythrodermic, 18% had arthropathic, 15% had generalized pustular, and 8% had palmoplantar pustular psoriasis.

Study Limitations

The main limitations of the study include the retrospective design, small sample size and non-similar number of patients in different age groups.

Conclusion

In this study, parameters such as family history, clinical types, PASI values, joint and nail involvement, concomitant comorbidities and dermatoses, and treatments used were compared. Most of our patients were between the ages of 41-65 years. Plaque psoriasis was the most common type in all age groups. The most common psoriasis form between 0-18 years was plaque psoriasis but the frequency of guttate psoriasis was significantly higher than that of other age groups. The highest PASI values and nail involvement were observed between the ages of 41-65 years whereas joint involvement was most common in patients over 65 years. Age was found to be a significant factor especially in the distribution of clinical types, joint and nail involvement, comorbidities and treatment selection.

Ethics

Ethics Committee Approval: The study was approved by the Ege University Faculty of Medicine Local Ethic Committee (approval number: 17-1/8, date: 09.05.2017).

Informed Consent: It was obtained.

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Authorship Contributions

Surgical and Medical Practices: H.A., İ.E.S., A.A., B.G.T., İ.Ü., Concept: H.A., İ.E.S., A.A., B.G.T., İ.Ü., Design: H.A., İ.E.S., Data Collection or Processing: H.A., İ.E.S., A.A., B.G.T., İ.Ü., Analysis or Interpretation: H.A., İ.E.S., Literature Search: H.A., İ.E.S., Writing: H.A., İ.E.S., A.A.

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