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Original Article

Skin and Gut: Psoriasis and irritable bowel syndrome. Is there an association?

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Abstract

Aim: The frequent occurrence of psoriasis with gastrointestinal system diseases indicates that psoriasis may also be associated with IBS. We aimed to evaluate the frequency of irritable bowel syndrome in patients with psoriasis and psoriatic arthritis.

Material and Methods: Study included 111 patients with psoriasis, and 214 healthy volunteers. The presence of IBS in the psoriasis and control groups was evaluated according to the Rome III diagnostic criteria (Recurrent abdominal pain or discomfort at least 3 days/month in the last 3 months associated with two or more of the following: Improvement with defecation, onset associated with a change in frequency of stool, onset associated with a change in form (appearance) of stool). The participants were also asked about the presence of findings supporting the diagnosis of IBS. The participants were asked about the frequency of defecation, and the stool type was evaluated according to the Bristol stool form scale

Results: 41 (36.9%) patients in the psoriasis group and 27 (12.6%) controls were detected to have IBS(p< 0.001). Passage of mucus, abdominal distension, and straining were found more frequently in the psoriasis group than in the control group (p = 0.023, 0.001, and 0.001, respectively). The mean defecation frequency per week was significantly higher in the psoriasis group than in the control group (p = 0.000). The mean value for the Bristol stool scale was 4.12 ± 1.13 for the psoriasis group and 3.72 ± 1.16 for the control group (p = 0.003).

Conclusion: The increased frequency of IBS and the findings supporting the diagnosis of IBS in these patients suggest that they have a tendency to develop IBS. The indication of a higher frequency of IBS in patients with psoriatic arthritis is another important outcome of the present study.

Keywords: Functional disorder; irritable bowel syndrome; psoriasis

INTRODUCTION

Psoriasis is an inflammatory skin disease characterized by increased epidermal proliferation and erythematous-squamous lesions (1). Patients with psoriasis comprise 6–8% of patients referred to dermatology outpatient clinics (2). Psoriasis is a chronic disease and is associated with much comorbidity, including a relationship with gastrointestinal diseases (3,4). Notably, in patients with psoriatic arthritis, more frequent occurrences of both Crohn's disease and ulcerative colitis, as well as of irritable bowel syndrome (IBS), have been reported (3-6).

IBS is a chronic functional gastrointestinal system disease characterized by the absence of an organic pathology, alteration in defecation or bowel habits, and abdominal discomfort, pain and bloating. IBS is more common in females than in males, and its symptoms are seen in 9–22% of the adult population (7,8). The frequent occurrence of IBS in conjunction with psoriatic arthritis suggests that IBS may also occur more frequently in patients with cutaneous psoriasis. However, to our knowledge, no data have yet been published to show that an increased frequency of IBS is also present in patients with psoriasis.

An additional factor to consider is that both psoriasis and IBS are affected by psychological conditions, with stress being an especially common trigger for both diseases. Histopathological investigations also confirm that both diseases share common pathological changes (1,6). Interestingly, many studies have shown that alterations in gut microbiota play a role in the pathogenesis of both inflammatory bowel diseases and psoriasis. Similarly, alterations in gut microbiota are also implicated in the pathogenesis of IBS (9-13).

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These common features suggest a possible relationship between psoriasis and IBS. In the present study, our aim was to evaluate whether a relationship exists between these two diseases by evaluating the prevalence of IBS and some clinical parameters in patients with psoriasis.

MATERIAL and METHODS

Ethics committee approval was received for the study (decision number of 2017/12, dated 21.06.2017). Written informed consent was obtained from all patients.

The study included 111 patients with psoriasis, aged between 18–80 years who attended the dermatology and venerology outpatient clinic. The control group consisted of 214 healthy volunteers attending the family medicine outpatient clinic, aged 18–80 years, who were not diagnosed with psoriasis, had no history of drug use, had no chronic systemic disease and were matched with psoriasis group in age and sex.

Patients who had severe weight loss in the last six months, a positive fecal occult blood test, a history of personal or familial colon cancer, a GI disorder (such as Crohn's disease, ulcerative colitis and celiac disease) or antibiotic treatment in the last month were excluded from the study.

The presence of IBS in the psoriasis and control groups was evaluated according to the Rome III diagnostic criteria (Table 1). The participants were also asked about the presence of findings supporting the diagnosis of IBS (Table 2) that are not included in the Rome III criteria but are included in the Rome II criteria (14).

The participants were asked about the frequency of defecation, and the stool type was evaluated according to the Bristol stool form scale (15).

Participants with IBS were asked about IBS duration and any family history of IBS. Patients with IBS in the psoriasis group were also asked whether they observed any increase in the symptoms of psoriasis during IBS attacks or, conversely, any increase in IBS symptoms during exacerbation of psoriasis.

Statistical analysis

The data obtained at the end of the study were evaluated with SPSS (Statistical Package for Social Sciences for Windows) version 22.0. Numbers, percentages, means and standard deviations were used to evaluate the data. For normally distributed data, an independent t-test was used to compare two independent populations. The Chi-square test was used to determine the frequency distributions of categorical data. The results were evaluated with a confidence interval of 95% and a significance level of $p < 0.05$.

Table 1. Roma III Diagnostic Criteria for IBS

Recurrent abdominal pain or discomfort at least 3 days/month in the last 3 months associated with two or more of the following:

1. Improvement with defecation
2. Onset associated with a change in frequency of stool
3. Onset associated with a change in form (appearance) of stool

(Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis)

Table 2. Findings supporting the diagnosis of IBS (not included in Rome III criteria; but in Rome II)

- Abnormal stool frequency (< 3 times per week or >3 per day)
- Abnormal stool form (lumpy/hard or loose/watery stool)
- Passage of mucus
- Abdominal distension
- Feeling of incomplete evacuation
- Straining

RESULTS

The study included 111 patients (46 males [41.4%] and 65 females [58.6%]) clinically diagnosed with psoriasis who attended the dermatology and venerology outpatient clinic and 214 healthy volunteers (102 males [47.7%] and 112 females [52.3%]) ($p = 0.342$). The mean age was 41.18 ± 14.6 years (min: 18, max:74) for the patient group and 39.67 ± 13.8 (min: 18, max: 75) for the control group ($p = 0.362$).

IBS was significantly more frequent in the psoriasis group than in the control group ($p < 0.001$) (Table 3).

Among the findings supporting the diagnosis of IBS, passage of mucus, abdominal distension, and straining were found more frequently in the psoriasis group

Table 3. Bristol stool scale [15]

Type 1		Separate hard lumps, like nuts
Type 2		Sausage shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces, entirely liquid

than in the control group (p = 0.023, 0.001, and 0.001, respectively). The frequency of abnormal stool form and feeling of incomplete evacuation were similar in both groups (p = 0.835 and 0.637, respectively) (Table 3).

The mean defecation frequency per week was significantly higher in the psoriasis group than in the control group (p = 0.000) (Table 3).

In the psoriasis group, 17 patients (15.3%) had a family history of IBS, but 94 patients (84.7%) did not. In the control group, 43 (20.1%) participants had a family history of IBS. No statistically significant difference was detected between the psoriasis and control groups in terms of family history of IBS (p = 0.367) (Table 3).

The distribution of stool form patterns according to the Bristol stool form scale for the psoriasis and control groups is shown in Table 4. The mean value for the Bristol stool scale was 4.12 ± 1.13 for the psoriasis group and 3.72 ± 1.16 for the control group (p = 0.003).

Table 4. Demographic and clinical features of participants

	Psoriasis	Control	x^2/t	p
Male Female (number - %)	46 (41.4%) 65 (58.6%)	102(47.7%) 112 (52.3%)	0.904	p:0.342
Age (mean±SD)	41.18±14.68 (min-max:18-74)	39.67±13.82 (min-max:18-74)	0.912	p:0.362
IBS (+) (number - %)	41 (36.9%)	27 (12.6%)	24.679	p< 0.001
Abnormal stool frequency (+) (number - %)	15 (12.7%)	53 (24.8%)	5.707	p: 0.017
Abnormal stool form (+) (number - %)	22 (19.8%)	46 (21.5%)	0.043	p: 0.835
Passage of mucus (+) (number - %)	23 (20.7%)	23 (10.7%)	5.190	p: 0.023
Abdominal distension(+) (number - %)	48 (43.2%)	52 (24.3%)	11.440	p :0.001
Feeling of incomplete evacuation(+) (number - %)	38 (33.6%)	65 (30.4%)	0.223	p: 0.637
Straining (+) (number - %)	49 (44.1%)	55 (25.7%)	10.593	p: 0.001
Defecation frequency (mean.±SD)	7.07±3.3	3.07±1.6	11.896	p: 0.000
Arthritis (+) (number - %)	26 (23.4%)			
Nail involvement (+) (number - %)	26 (23.4%)			
Family history of psoriasis(+) (number - %)	39 (35.1%)			
Family history of IBS (+) (number - %)	17 (15.3%)	43 (20.1%)	0.814	p: 0.367

IBS was significantly more common in patients with psoriatic arthritis than in those without psoriatic arthritis (p < 0.001). Conversely, no difference was noted in the frequency of IBS between the patients with psoriasis with and without nail involvement (p = 0.456) (Table 5).

Table 5. Distribution of stool form according to Bristol stool scale

Bristol stool form	Psoriasis (number)	(%)	Control (number)	(%)	t	p
1	4	3.6	5	2.3		
2	3	2.7	15	7.0		
3	13	11.7	75	35.0		
4	64	57.7	85	39.7		
5	12	10.8	14	6.5		
6	13	11.7	14	6.5		
7	2	1.8	6	2.8		
Total	111	100	214	100		
Mean (mean ± SD)	4.12±1.13		3.72±1.16		2.950	0.003

No significant difference was detected in the frequency of IBS in patients with psoriasis with and without a family history of psoriasis (p = 0.511). However, IBS was seen in 15 of 17 (88.2%) patients with psoriasis and a family history of IBS and in 26 of 94 (27.7%) patients with psoriasis but without a family history of IBS. These results show that IBS is more common in patients with psoriasis and a family history of IBS than without a family history of IBS (p < 0.001) (Table 6).

Table 6. Frequency of IBS in patients with arthritis, nail involvement and family history in psoriasis group

	IBS (-)	IBS (+)	p value
Arthritis (+) (number - %)	7 patients (26.9%)	19 patients (74.1%)	p < 0.001
Nail involvement (+) (number - %)	18 patients (69.2%)	8 patients (30.8%)	p : 0.456
Family history of psoriasis(+) (number - %)	23 patients (59.0%)	16 patients (41.0%)	p : 0.511
Family history of IBS (+) (number - %)	2 patients (11.8%)	15 patients (88.2%)	p < 0.001

DISCUSSION

The frequent occurrence of psoriasis with gastrointestinal system diseases, as well as their common genetic and epidemiological features, indicate that psoriasis may also be associated with IBS (1,2,16,17).

In our study, the frequency of IBS was significantly higher in the psoriasis group than in the control group (36.9% and 12.6%, respectively; p=0.000) (Table 3). In addition to the increased frequency of IBS, the psoriasis group also showed a higher frequency of findings supporting the diagnosis of IBS, such as passage of mucus, abdominal distension and straining, suggesting a tendency to IBS in patients with psoriasis (Table 3). The frequency of IBS was also significantly higher in patients with psoriatic arthritis than in those without psoriatic arthritis (Table 5).

Only one study in the literature has evaluated the relationship between psoriasis and IBS. That study, published in 2016 by Zohar et al., included 3161 patients with psoriatic arthritis and 31,610 controls (3). Those researchers evaluated the frequency of gastrointestinal co-morbidities, such as ulcerative colitis, Crohn's disease, peptic ulcer, gastroesophageal reflux disease, reflux esophagitis, celiac disease and IBS, in patients with psoriatic arthritis. They detected IBS in 47 (1.48%) of 3161 patients with psoriatic arthritis and in 345 (1.1%) of 31610 participants in the control group. Based on those results, the researchers concluded that the rate of IBS was significantly higher in patients with psoriatic arthritis than in the controls (OR 1.4, 95% CI 1.01–1.86, p = 0.05) (3).

Because the number of studies evaluating the relationship between IBS and rheumatic/dermatologic diseases is so limited, the reason why IBS is more common in patients with psoriasis and with psoriatic arthritis is not clear. A study by Lubrano et al. in 2001, which reported a frequency of 20% for fibromyalgia among patients with IBS, is one of the rare studies in this area (18). Fibromyalgia is also seen in 17.2% of patients with psoriatic arthritis. The increased incidence of fibromyalgia in both IBS and psoriatic arthritis may further indicate an indirect relationship between IBS and psoriasis (19). Another possible relationship may be the alteration in gut microbiota seen in psoriasis and psoriatic arthritis patients; this type of alteration is also a feature of IBS. For example, inflammation in the intestinal area due to a decrease in the actinobacteria phylum, which exhibits anti-inflammatory properties, may trigger both psoriatic skin lesions and psoriatic arthritis by allowing the passage of unknown antigens (11-13).

Our study results also showed a significantly higher mean defecation frequency per week in the psoriasis group than in the control group (7.07 ± 3.3 and 3.07 ± 1.6, respectively; p = 0.000) (Table 3). Previous studies have shown an increase in the number of mast cells in the intestinal mucosa and even in the peripheral blood of patients with either psoriasis or IBS (1,2,20,21). The main mediator released as a result of degranulation of mast cells is histamine, which is known to cause a tendency towards diarrhea by increasing intestinal motility, whereas antihistaminic drugs trigger constipation (22). Therefore, the higher frequency of defecation detected in patients with psoriasis compared to controls may be related to a greater histamine release from the increased

numbers of mast cells in their intestinal mucosa due to proinflammatory conditions (e.g., stress).

In our study, the mean value of the Bristol stool scale was 4.20 ± 1.2 for the psoriasis group and 3.72 ± 1.16 for the control group. This result suggests that patients with psoriasis tend to have a softer or more watery stool when compared to healthy controls. The tendency of patients with psoriasis to make softer or more watery stools may reflect a possible increase in histamine release from mast cells, as described above, which would also cause more frequent defecation. Interestingly, despite their softer/watery stools, the patients with psoriasis had a higher rate of straining during defecation.

CONCLUSION

To our knowledge, this is the first study in the literature to evaluate the frequency of IBS in patients with psoriasis. The increased frequency of IBS and the findings supporting the diagnosis of IBS in these patients suggest that they have a tendency to develop IBS. The indication of a higher frequency of IBS in patients with psoriatic arthritis is another important outcome of the present study. Taken together, the results emphasize that dermatologists, gastroenterologists and family physicians should be aware of the potential for the coexistence of psoriasis and IBS. However, our study has the limitation that it was performed with a only a small number of patients and controls. Therefore, further more comprehensive studies are needed to confirm the common pathophysiological characteristics of these two diseases.

Competing interests: The authors declare that they have no competing interest.

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Ethical approval: Ethics committee approval was received for the study (decision number of 2017/12, dated 21.06.2017).

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