

Original article

Association of streptococcal throat infection with plaque psoriasis

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Abstract

The association of streptococcal sore throat with guttate psoriasis is well established, but its association with psoriasis vulgaris is not yet clear. This cross-sectional observational study was conducted in the department of Dermatology and Venereology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from June, 2012 to February 2013 with the intention to ascertain whether streptococcal throat infections are more common in patients with chronic plaque psoriasis. Antistreptolysin O (ASO) titre and culture for β -haemolytic streptococci was done among thirty four patients with chronic plaque type psoriasis and same number of normal healthy controls. Raised ASO titre was found in 26.5% of patients with psoriasis vulgaris and 11.8% of normal healthy controls ($p>0.05$). Culture of throat swab for streptococcus β -haemolyticus was positive in 20.6% of psoriatics and none of controls. Laboratory evidences of streptococcal throat infection are more common in patients with chronic plaque type psoriasis. More clinical trials to see the efficacy of anti-streptococcal therapy and tonsillectomy in plaque psoriasis should be carried out.

Key words: ASO titre, Throat culture, Plaque psoriasis, streptococcus β -haemolyticus.

Introduction

Psoriasis vulgaris is a complex, multifaceted skin condition, the pathogenesis of which is still poorly understood.¹⁻³ Today, psoriasis vulgaris is recognised as

the most prevalent autoimmune disease caused by inappropriate activation of the cellular immune system. Psoriasis affects people of all ages, but there is a strong tendency for disease onset in early adulthood in patients who develop psoriasis due to genetic transmission.⁴ Streptococcal infection is most common around puberty.⁵ The association of β -haemolytic streptococcal throat infection and guttate psoriasis was noticed by Winfield in 1961,⁶ and supported by many studies.⁷⁻¹³ Despite the established association of guttate psoriasis and streptococcal infection; and as some patients with guttate psoriasis go on to develop plaque psoriasis,¹⁴ the association of psoriasis vulgaris with streptococcal throat infection is not yet clear. The current study was aimed to explore the association of plaque type psoriasis with streptococcal throat infection.

Methods

In this cross sectional type observational study, β -haemolytic streptococcal throat infection as evidenced by positive serology and throat swab culture was assessed among thirty four patients of plaque psoriasis (group A). It was compared with same number of age-matched non-psoriatic control (Group B). Plaque psoriasis was diagnosed clinically. Histopathology was done and Psoriasis Area and Severity Index (PASI) were assessed where diagnosis was not confirmed clinically. Antistreptolysin O (ASO) titre and throat swab culture for β -haemolytic streptococci were done among all cases of psoriasis and non-psoriatic controls and compared between two groups.

Results

Mean age (\pm SD) of the patients of psoriasis was 41.07 ± 9.90 years, ranging from 9 to 67 years and mean age of normal controls was 42.39 ± 8.47 years ranging from 6 to 74 years. Age distribution was similar between two groups ($p>0.050$) (Table-I).

Mean PASI was 41.07 ± 9.90 with a range 4.23 to 22.46 and mean duration of disease was 7.83 ± 3.63 years ranging from 2 to 23 years (Table - II).

ASO titre is higher than the upper limits of normal value in 9 (26.5%) plaque psoriasis cases and 4 (11.8%) of controls, but there is no statistical difference ($p>0.05$). (Table- III).

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Table-I: Distribution of respondents according to age

| Age (in year) | Group A (n=34) | Group B(n=34) |
|----------------------|------------------------|----------------------|
| 10 | 4(11.8) | 5(14.7) |
| 11-20 | 3 (8.8) | 4(11.8) |
| 21-30 | 5(14.7) | 3 (8.8) |
| 31-40 | 11(32.4) | 9(26.5) |
| 41-50 | 7(20.6) | 10(29.4) |
| >50 | 4(11.8) | 3 (8.8) |
| Total | 34(100.0) | 34(100.0) |
| Mean ± SD (Range) | 41.07 ± 9.90 (9-67) | 42.39±8.47 (6-74) |

Chi square test was done to measure the level of significance. p value - 0.072. # Figure within parentheses indicates in percentage.

Table-II: Distribution of severity of psoriasis (n=34)

| | Mean ± SD | Range |
|-----------------------------|-------------|-------------|
| PASI | 5.53 ± 1.91 | 4.23 -22.46 |
| Duration of disease (years) | 7.83 ± 3.63 | 2-23 |

Table - III : Level of ASO titre

| ASO Titre | Group | |
|-----------|---------------------------------|---------------------------------|
| | Group-A plaque psoriasis (n=34) | Group- B normal controls (n=34) |
| >UNL* | 9 (26.5) | 4(11.8) |
| ≤UNL* | 25(73.3) | 30(88.2) |
| Total | 34 (100.0) | 34 (100.0) |

Chi-Square value = 2.6, df = 1, p value > 0.05 *UNL: upper limits of normal ASO titers are 195 IU and 305 IU for adults.¹⁵ #Figure within parentheses indicates in percentage.

Culture of throat swab for streptococcal streptococcus β hemolyticus was positive in 7 (20.6%) psoriatics and none of controls(Table-IV)

Table-IV: Culture of throat swab for of Streptococcus β-hemolyticus.

| | Group | |
|------------------|----------------|----------------|
| | Group-A (n=34) | Group-B (n=34) |
| Positive culture | 7(20.6) | 0(0.0) |

Discussion

Psoriasis is a common chronic immune mediated disease that affects 1% to 3% of the population.¹⁶⁻¹⁸ Although genetic association of psoriasis is established,¹⁹⁻²² it is also clear that environmental factors are involved in the expression of the disease.²³ In 1990 Mc Fadden et al hypothesized that surviving epidemics of invasive streptococcal infection as a natural selection factor, may influence the occurrence of psoriasis becoming a common skin disease in some parts of the world.²⁴ Association of streptococcal throat infection and guttate psoriasis is established;²⁻⁷ clinical and laboratory evidence of streptococcal throat sore and plaque psoriasis was recently reported.²⁵⁻²⁶ Gudjonsson et al confirmed anecdotal and retrospective reports that streptococcal throat infections can cause exacerbation of chronic plaque psoriasis.²⁵ Wardrop et al documented association of streptococcal acute tonsillitis with exacerbation of guttate, small and large plaque psoriasis.²⁶ Very recently El-Rachkidy et al justify the hypothesis that S pyogenes infections are more important in the pathogenesis of chronic plaque psoriasis than has previously been recognized.²⁷ In our study 26.5% of psoriatics and 13.3% normal control had ASO titre higher than the upper limits of normal value (although difference is not significant, p>0.05). It is in accordance with one previous study, in which 25–30% had raised antistreptolysin O titres.²⁸ They found positive throat culture for streptococcus β-hemolyticus in 20-30% patients with chronic plaque psoriasis; we found 20.6% positive culture in psoriatics and none of controls. Although laboratory evidence for higher rate of streptococcal throat infection among plaque psoriatics is found in previous studies including the current one, the association of streptococcal throat infection with plaque psoriasis is not completely clear. So further studies to explore its immunological background & to see the efficacy of anti-streptococcal therapy and tonsillectomy in plaque psoriasis should be carried out.

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