

Psoriasis and Psoriatic Arthritis in Peruvian Aborigines: A Report from the GRAPPA 2011 Annual Meeting

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ABSTRACT. Objective. To determine the presence of psoriasis and psoriatic arthritis (PsA) in aboriginal people living in the Andean Mountains of Peru.

Methods. Consecutive patients with psoriasis and PsA attending an arthritis clinic in Juliaca, Puno, Peru, located 3824 m above sea level were examined. The CASPAR (CLASSification of Psoriatic ARthritis) criteria were used for classification of PsA. Diagnosis of psoriasis was confirmed by a dermatologist.

Results. Seventeen patients [11 (65%) men and 6 (35%) women] fulfilled classification criteria for PsA; one patient was of European ancestry and is not included in this report. Of the 16 aboriginal patients in this report, 5 were natives of Quechua ancestry and one was native Aymara. At the time of their first clinic visit, no native patient with PsA had a family history of psoriasis or PsA, and all patients exhibited an established disease of long duration and severity. Methotrexate was the drug of choice for all patients; 2 patients are currently receiving biological therapy.

Conclusion. Contrary to what has been reported in the literature, both psoriasis and PsA are present in aboriginal people from the Andean Mountains of Peru. More studies are needed to further define the phenotype of these disorders, as well as the pathogenetic role of genetic and environmental factors. (J Rheumatol 2012;39:2216–19; doi:10.3899/jrheum.120828)

Key Indexing Terms:

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ABORIGINES, INDIGENOUS POPULATIONS

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The burden of psoriatic disease varies among populations and is more common in whites from the Northern (cooler) Hemisphere than in populations living near the equator or in milder, tropical climates of the Southern Hemisphere¹. The prevalence of this condition also varies within ethnic groups of a country and from country to country². In a study ascertaining the epidemiology of dermatological diseases in 1602 patients in 3 local hospitals in the Peruvian Amazonia from 2006 to 2008, infectious and parasitic dermatoses were the most prevalent (31.5%) dermatological conditions diagnosed. Parasitic dermatoses such as scabies, pediculosis,

and myiasis were associated with lower altitudes, < 700 m above sea level, whereas radiation-related skin disorders were associated with higher altitude, > 700 meters above sea level. Psoriasis was not reported³.

Besides climate and genetic background, other risk factors (e.g., trauma and infections) may play a role in psoriatic disease occurrence⁴; however, other less studied factors like altitude may be relevant and perhaps protective. In a comprehensive dermatological survey conducted in the 1950s among 25,915 aborigines living in the Peruvian Andes, both psoriasis and psoriatic arthritis (PsA) were far less common in Quechua native populations¹. However, as we show below, a significant number of cases of psoriasis and PsA were observed in a small native population living at a higher altitude⁵.

Our study was conducted in southern Peru near Lake Titicaca, a geographic region 3824 meters above sea level that is known as the Altiplano Plateau and shared between Peru and Bolivia. As a result of migratory waves in this region 13,000 to 10,000 years ago, several ethnic groups came to Peru (e.g., Quechua, Aymara, Uro)⁶. 1500 years ago, the Aymara culture was joined by Quechua natives of central Peru. Both cultures coexisted until the arrival of the Spanish conquistadors, when they were displaced to central camps that have persisted⁷.

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America is only partially known¹⁰. This epidemiological gap is related to several challenges faced by Latin American investigators, including psoriatic disease heterogeneity, the use of different classification criteria for its ascertainment, the transient nature of arthritis and enthesitis in psoriatic patients with peripheral involvement, and the absence of specialized medical centers with adequate numbers of trained dermatologists and rheumatologists caring for patients with psoriatic disease. Further challenges include the lack of medical facilities where appropriate diagnostic measures for the assessment of large populations can be performed (e.g., ultrasound, magnetic resonance imaging, and pelvic radiographs), and the lack of reliable biomarkers for diagnosis and prognostication. Other challenges include difficulties in performing HLA genotyping (including HLA-B27), the fact that its expression is associated with some but not all types of PsA, and that not all ethnic groups show the same associations (e.g., native populations).

Current DNA studies support 2 (or possibly 3) genetically distinct groups that settled the Americas: the first occurred up to 30,000 years ago (the Amerinds), comprising the groups in South and Central America and Eastern North America; the second occurred later and comprise the Pacific Northwest and Southwest tribes (Pima, Navajo, and NaDenes); the third group included the Inuit¹¹.

The frequency and susceptibility to rheumatic diseases in the Americas have followed a pattern apparently related to population migration that occurred thousands of years ago. Certain conditions like rheumatoid arthritis, lupus, and other connective tissue diseases have clustered among Amerinds, whereas those conditions that are associated with the HLA-B27 genotype have clustered among the NaDenes and Inuit¹¹. However, despite the high prevalence of HLA-B27 among the latter North American tribes, the presence of psoriasis and PsA has been almost negligible.

Natives may either lack specific predisposing genes or have genes or environmental exposures promoting resistance to the development of psoriasis. It is possible that the Quechua's biological and cultural adaptations to their living conditions (high altitude, cold, and infections) over thousands of years may have helped them to develop efficient immunological systems to protect them against psoriasis. However, this adaptation process may have been broken with the arrival of the Spanish conquistadors who brought with them infections and new genes, with ensuing changes in genetic and environmental factors leading to occurrence of psoriatic disease. Upregulation of innate immune responses is seen in psoriatic lesions, supporting their major role in psoriasis development¹². However, it is intriguing to note that even though natives living in the Andean Mountains were exposed to new genes and infections from the conquistadors, psoriasis was not found at the time of a recent and large epidemiological survey^{5,13}.

In Latin America, the prevalence and incidence of psoria-

sis and PsA are lower than in other parts of the world. Clinically, these cases are almost negligible among natives from the Andean region of Peru; however, this relationship has not been confirmed by adequate epidemiological studies.

The first description of PsA in the Americas is illustrated in a text written by Fray Felipe Colombo in the 17th century, where he described the suffering of Fray Urraca, a Spanish priest in Peru: "For 29 years he was afflicted by gout, without a single day of relief from his pain, suffering it at once in all the joints of his body, hands became hooked, fingers bending backward, became rigid as steel. Knees and legs became curved and unmovable, and our Lord gave him lepra, from his neck to feet, with scars and scales like a fish, the width of a fingernail."¹⁴

The prevalence of psoriasis and PsA in Latin America has been estimated at 2.14% (SD 0.92, range 1.13%–2.9%) and 15.25% (SD 3.88, range 10%–18%), respectively¹⁵, somewhat comparable to rates in the United States and Europe. However, data presented at a 2010 symposium of the Spondyloarthritis Research and Treatment Network showed that PsA was highly prevalent in Argentina but much rarer in Brazil and Guatemala¹⁰. Given the small sample size and collection criteria, however, these data may be biased or inaccurate, and do not include discussion of ethnicity, especially in countries like Peru, Ecuador, and Mexico with large native populations¹⁶.

Few genetic studies are available in Latin American populations with psoriasis and PsA. Available data primarily establish a relationship between HLA-C6 and HLA-B27 with disease expression in whites, and no studies have been performed in other ethnicities including natives. The HLA-B2705* allele was present in 90.5% of the PsA patients in this study; however, this figure may be biased because only the axial skeleton was considered during diagnosis.

Similar findings have been described in indigenous people from other areas of the world^{17,18}. Peschken and Esdaile have shown that the majority of native North American and Inuit groups have high frequencies of HLA-B27; however, although some of the world's highest rates of reactive arthritis and ankylosing spondylitis have been described in these groups, PsA rarely occurs¹¹. A study of Australian aborigines is also relevant. In comparison with non-aboriginal Australians, Australian aborigines have higher frequencies of rheumatic fever, systemic lupus erythematosus, various infections, and post-streptococcal glomerulonephritis. In contrast, various autoimmune disorders, HLA-B27-related arthritides, and psoriasis appear infrequently or are absent¹⁹. It should be noted, however, that a more recent WHO-ILAR COPCORD survey found 4 cases of PsA (point prevalence 0.5%) in an Australian aboriginal community²⁰.

Conclusion

This is the first report describing both psoriasis and PsA in

a native Peruvian population of the Andean Mountains. Further studies on the prevalence and phenotype of these clinical disorders, with larger numbers of patients, may provide important clues to the role of ethnicity and environmental factors in the etiopathogenesis of these disorders.

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