

# Alcohol as a Risk Factor for Plaque-Type Psoriasis

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*The association between alcohol and the development of plaque-type psoriasis is complex and confusing because many of the initial studies did not control for confounding factors such as tobacco use. This article presents a literature review of the epidemiologic, case-controlled, and clinical studies that examined the relationship between alcohol and plaque-type psoriasis. Early studies showed no correlation between alcohol consumption and plaque-type psoriasis. However, as researchers began to control for confounding factors, study results often illustrated a significant correlation between alcohol use and psoriasis. Some studies suggested a relative risk factor of 8.01, particularly in men. However, the studies did not document an increased risk for plaque-type psoriasis in women who drank alcohol. We recommend that clinicians discourage patients with psoriasis from consuming alcohol, especially during periods of disease exacerbation.*

*Cutis.* 2005;76:181-185.

Psoriasis is a hyperproliferative skin disorder affecting more than 7 million people in the United States, with approximately 260,000 new cases occurring each year.<sup>1,2</sup> It is a common, chronic, inflammatory disease that is associated with psychosocial morbidity and health-related decreases in quality of life.<sup>3</sup> Psoriasis is a multifactorial disorder, and many etiologic factors have been suggested, including genetics,<sup>4</sup> skin trauma,<sup>5</sup> infections,<sup>6</sup> drugs,<sup>7</sup> and smoking.<sup>8</sup>

Accepted for publication August 23, 2004.

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Although the association between alcohol intake and psoriasis is of particular interest, there are numerous difficulties in assessing such a relationship, including defining alcoholism, quantifying alcohol consumption, and controlling for confounders, such as smoking.<sup>9,10</sup> Nevertheless, multiple studies have attempted to explain this relationship. This article presents a literature review of the epidemiologic, case-controlled, and clinical studies examining the relationship between alcohol and plaque-type psoriasis, focusing on disease risk factors, improvement, and mortality rates.

## Methods

A review of all articles published in English between 1950 and 2004 was conducted using MEDLINE to search for clinical trials, epidemiologic studies, cohort studies, randomized controlled trials, meta-analyses, review articles, and letters. Of all articles captured, 33 provided relevant data.

## Comment

The Table summarizes some of the studies that assess the relationship between alcohol and psoriasis.<sup>11-32</sup> Many of the early studies conducted between the 1950s and early 1980s failed to show a positive correlation between alcohol intake and plaque-type psoriasis. In one study involving 500 alcoholic subjects, the incidence of psoriasis was determined to be 3.1%, which was within the accepted prevalence rate among the general population.<sup>11</sup> The results of another study of alcoholic subjects showed an incidence of 3.4%.<sup>33</sup> The results of a questionnaire administered to 1000 subjects found no difference between the drinking habits of subjects with psoriasis and those who did not have psoriasis.<sup>14</sup> In 3 other studies, no significant correlation was observed between alcohol consumption and onset or duration of psoriasis.<sup>15-17</sup>

Although the studies conducted between the 1950s and early 1980s consistently failed to show a positive association between alcohol intake and psoriasis, alcohol-related liver abnormalities were more common in those with psoriasis than in controls.<sup>34</sup> These findings suggest that subjects with psoriasis consume more alcohol than the general population. In a

## Summary of Studies Assessing the Relationship Between Alcohol and Psoriasis\*

Reference (Date)	Design	Results	Association Between Psoriasis and Alcohol
Texon <sup>11</sup> (1950)	Study of 500 alcoholic pts to determine prevalence of psoriasis	3.1% had psoriasis	No
Lomholt <sup>12</sup> (1964)	Evaluation of one third of Faroe Island population to determine alcohol intake in psoriasis pts	Inconclusive: alcohol intake in psoriasis pts could not be determined	NA
Berge et al <sup>13</sup> (1970)	Examination of liver biopsy samples from 32 pts with severe psoriasis	16 of 32 pts had pathologic adiposis. Of the 9 psoriasis pts with a strong history of alcohol consumption, 6 had pathologic liver infiltration, and 2 had Laënnec cirrhosis	Yes
Delaney and Lepperd <sup>14</sup> (1974)	Questionnaire administered to 1000 pts regarding drinking habits	No difference in drinking habits between pts with and without psoriasis	No
Grunnet <sup>15</sup> (1974)	Study of 281 psoriasis pts	No difference in alcohol consumption detected between psoriasis pts and controls. No correlation found between alcohol consumption and duration or extent of the disease	No
Margolis and Roberts <sup>16</sup> (1976)	Interviews with 500 general hospital pts	4/351 drinkers had psoriasis	No
Parish and Fine <sup>17</sup> (1985)	Examination of 101 pts who met criteria for alcoholism for dermatologic signs and symptoms	No significant relationship observed	No
Chaput et al <sup>18</sup> (1985)	Evaluation of alcohol consumption and psoriasis in 1987 inpatients	Psoriasis more common in M pts with alcohol intake >50 g/d	Yes
Morse et al <sup>19</sup> (1985)	Study comparing alcoholic intake of hospitalized psoriasis pts with control group without psoriasis	Alcoholism more common in hospitalized M psoriasis pts; 11% of psoriasis pts were alcoholic vs 3% of controls	Yes
Monk and Neil <sup>20</sup> (1986)	Study of 100 M and F pts with severe, chronic, plaque-type psoriasis	>35% of pts with severe disease were heavy drinkers vs <10% of pts with mild disease	Yes
Lindegard <sup>21</sup> (1986)	Cohort study of 159,200 Swedes followed for a decade	372 psoriasis cases observed. Psoriasis strongly associated with alcoholism and liver cirrhosis in both sexes ( $P<.001$ ). 34/372 psoriasis pts were alcoholics	Yes
Stern and Lange <sup>22</sup> (1988)	Cohort study of 1380 psoriasis pts	Mortality due to cirrhosis increased, with a standard mortality ratio of 4.7 for both sexes combined (M, 3.3; F, 11.4). Regular alcohol consumption associated with >3-fold increase in risk of death from cirrhosis	Yes
Braathén et al <sup>23</sup> (1989)	Interview survey of 10,567 individuals in Norway regarding smoking and alcohol consumption	Psoriasis found in 149 pts; psoriasis pts tended to drink more often and in larger amounts than nonpsoriasis pts	Yes
Zamboni et al <sup>24</sup> (1989)	Italian study on the dietary behaviors of 219 psoriasis inpatients and 747 controls	Alcohol consumption higher in both M and F psoriasis pts than in controls	Yes

(continued)

Reference (Date)	Design	Results	Association Between Psoriasis and Alcohol
Poikolainen et al <sup>25</sup> (1990)	Retrospective survey of 144 M with psoriasis and 285 M with other skin disorders (controls) to evaluate alcohol intake 12 mo before onset of symptoms	Self-reported alcohol intake at 12 mo before onset of psoriasis was higher in M psoriasis pts (44.8 g/d) than in M controls (19.9 g/d). Psoriasis pts reported significantly more often ( $P=.04$ ) than controls that drinking worsened their skin disease	Yes
Naldi et al <sup>26</sup> (1992)	Multicenter study of 215 pts with initial diagnosis of psoriasis, with skin manifestations appearing <2 y prior to study. Study controlled for smoking	The odds ratio for developing psoriasis was 1.3 for pts who drank 1–2 alcoholic drinks/d and 1.6 for pts who drank $\geq 3$ drinks/d. These odds ratios were not statistically significant after adjusting for smoking habits	No
Higgins et al <sup>27</sup> (1993)	Confounder-controlled study of 130 psoriasis pts	Odds ratio was 8.01 for alcohol as an independent risk factor for psoriasis	Yes
Duffy et al <sup>28</sup> (1993)	Case-control analysis of 77 pairs of Australian twins	No significant relationship between alcohol and psoriasis	No
Gupta et al <sup>29</sup> (1993)	Prospective study of 94 psoriasis inpatients to determine alcohol intake and response to Tx	M (not F) who drank >80 g/d of ethanol prior to treatment had less treatment-induced improvement ( $P=.02$ )	Alcohol inhibits Tx response in M
Poikolainen et al <sup>30</sup> (1994)	Retrospective survey of 55 F with psoriasis and 108 F with other skin disorders (controls) to evaluate alcohol intake 12 mo before onset of skin disease	No association was found between alcohol and onset of psoriasis. After disease onset, significantly more psoriasis pts than controls reported that their disease was worsened by drinking ( $P=.0002$ )	Yes
Poikolainen et al <sup>31</sup> (1999)	Cohort study of 5687 psoriasis pts followed for 22 y	Mortality among psoriasis pts was 1918, 58% higher than expected national average (1211). Mortality odds ratio was 1.6 for M with psoriasis and was 1.54 for F with psoriasis. Alcohol-related standardized mortality ratios were increased: alcohol psychosis, 8.91; alcohol dependence, 3.79; liver disease, 6.98; alcoholic liver cirrhosis, 2.88; liver cancer, 2.86; suicide, 1.56; assault, 2.15	Yes. Alcohol-related deaths account for excess mortality in psoriasis pts
Naldi et al <sup>32</sup> (1999)	Retrospective multicenter study of 404 pts with initial diagnosis of psoriasis, with skin manifestations developing <2 y prior to study. Study controlled for smoking	Odds ratios for the development of psoriasis in patients who drank >2 drinks/d were 1.9 for men and 0.7 for women. No association observed between F drinkers and development of psoriasis. Dose-response association was documented between alcohol intake of >2 drinks/d and development of psoriasis in M	F: no M: yes

\*Pts indicates patients/subjects; M, male/men; F, female/women; NA, not applicable; Tx, treatment.

study that examined liver biopsy samples from 32 patients with severe psoriasis, 9 patients were found to have a strong history of alcohol consumption exceeding 1 L/d of strong liquor; biopsy results for 6 of these patients exhibited evidence of pathologic liver infiltration, and 2 results included evidence of Laënnec cirrhosis.<sup>13</sup> In another study, alcoholic cirrhosis was found to be more common in patients with psoriasis than in patients with any other diseases studied.<sup>18</sup>

Despite that the initial epidemiologic data did not support a relationship between alcohol and psoriasis, the studies of liver pathology set the foundation for further studies conducted in the mid to late 1980s that showed a positive correlation. Results of interviews of more than 10,000 Norwegian subjects revealed that those with psoriasis had an increased tendency to drink larger amounts of alcohol than the population without psoriasis.<sup>23</sup> Results of another study demonstrated that psoriasis was more common in subjects who drank more than 50 g/d of alcohol.<sup>18</sup>

A cohort study of 159,200 Swedish subjects followed for a decade showed a significant association between the development of psoriasis and alcoholism and liver cirrhosis in both men and women ( $P < .001$ ).<sup>21</sup> In this cohort study, 9% of 372 patients with psoriasis were alcoholics. A similar study showed the incidence of alcoholism to be 11% in psoriasis patients, as opposed to 3% in the control population.<sup>19</sup> The incidences of alcoholism in these studies were higher than the 3.1% and 3.4% rates reported in earlier studies.<sup>11,33</sup> Further, in a study of 130 psoriasis patients that was controlled for confounders such as smoking, investigators calculated that the odds ratio for the development of psoriasis in subjects who drank alcohol was 8.01.<sup>27</sup> These studies provided evidence that alcoholism is more prevalent among the psoriasis population than the earlier studies had suggested and that alcoholism could serve as a risk factor for psoriasis.

Studies also have demonstrated differences between the sexes for a possible association between alcohol intake and psoriasis. In a retrospective study involving 144 male subjects with psoriasis and 285 male controls, participants were asked to estimate what their alcohol intake had been 12 months before the onset of the disease.<sup>25</sup> This study illustrated an association between alcohol intake and psoriasis in men: men who developed psoriasis reported higher alcohol consumption than men who developed other skin disorders. In addition, significantly more subjects with psoriasis reported that their skin disease worsened with drinking, as compared with those in the control group ( $P = .04$ ).<sup>25</sup> In a similar study with the same protocol, the relationship between alcohol intake and onset of psoriasis was examined in 55 female subjects with psoriasis and 108 female

controls.<sup>30</sup> In contrast to the study involving men, the results of this study did not support an association between alcohol consumption and the development of psoriasis in women. However, after the onset of disease, there was an association between alcohol intake and psoriasis in women. Female subjects with psoriasis reported significantly more often that their skin condition worsened with drinking than did the subjects in the control group ( $P = .0002$ ).<sup>30</sup> These retrospective studies suggest that alcohol may predispose to the development of psoriasis in men but not in women, though it can worsen disease severity in both sexes. Another retrospective study confirmed these results and calculated that the odds ratios for the development of psoriasis in patients who drank more than 2 alcoholic drinks per day were 1.9 for men and 0.7 for women.<sup>32</sup>

Gupta et al<sup>29</sup> examined the relationship between alcohol consumption and response to treatment. The investigators reported that a daily ethanol intake of more than 80 g significantly hindered clinical improvement in men with psoriasis but not in women with psoriasis ( $P = .02$ ).<sup>29</sup>

Studies have suggested that mortality rates among alcoholics with psoriasis were increased, with rates 58% higher than the expected national average.<sup>31</sup> Alcohol has been identified as a major cause of this excess mortality, as demonstrated by the high rates of alcohol-related causes of death, such as alcohol psychosis, alcohol dependence, alcoholic liver cirrhosis, and liver cancer.<sup>22,31</sup>

## Conclusion

Many studies from the 1950s to the 1980s showed no correlation between alcohol consumption and plaque-type psoriasis. However, many of the studies conducted since the mid 1980s have shown a positive correlation. These conflicting results have been the center of debate. It has been postulated that alcohol misuse is a risk factor for psoriasis and that the rise of alcohol misuse and addiction in the 1980s contributed to the positive correlation that became evident in the later studies.<sup>27,35,36</sup> It is also possible that improved study designs in later investigations yielded more accurate results. Certain study features may have improved the reliability of the results. For example, many of the later studies were multicenter prospective studies that included a large sample of subjects stratified by gender. Some studies also controlled for confounding factors and accounted for the alcohol content of different alcoholic beverages.

Overall, most studies have demonstrated a positive correlation between alcohol misuse and the development of psoriasis. Odds ratios for alcohol as an independent risk factor in psoriasis in men have

been calculated at 8.01.<sup>27</sup> In women, alcohol use does not appear to increase the risk of developing plaque-type psoriasis.<sup>30,32</sup> However, it has been shown that alcohol may worsen psoriasis in both sexes.<sup>30</sup> Further, one study suggested that alcohol is associated with decreased response to treatment in men,<sup>29</sup> and other studies have clearly demonstrated a higher than expected mortality in alcoholics with psoriasis, with the increased mortality directly related to alcohol-related morbidities.<sup>22,31</sup> Stress associated with psoriasis may lead to relief drinking, and drinking may further exacerbate existing psoriasis, causing a vicious cycle. The findings of all these studies have led us to recommend that patients with psoriasis limit their use of alcohol, especially during periods of exacerbation.

## REFERENCES

- Sander HM, Morris LF, Phillips CM, et al. The annual cost of psoriasis. *J Am Acad Dermatol*. 1993;28:422-425.
- Koo J. Population-based epidemiologic study of psoriasis with emphasis on quality of life assessment. *Dermatol Clin*. 1996;14:485-496.
- Choi J, Koo JY. Quality of life issues in psoriasis. *J Am Acad Dermatol*. 2003;49(suppl 2):S57-S61.
- Murray C, Mann DL, Gerber LN, et al. Histocompatibility alloantigens in psoriasis and psoriatic arthritis: evidence for the influence of multiple genes in the major histocompatibility complex. *J Clin Invest*. 1980;66:670-675.
- Harrison PV, Walker GB, Davies JE. Trauma for psoriasis. *Lancet*. 1985;2:1063-1064.
- Tagami H. Triggering factors. *Clin Dermatol*. 1997;15:677-685.
- Abel EA, DiCicco LM, Orenberg EK, et al. Drugs in exacerbation of psoriasis. *J Am Acad Dermatol*. 1986;15:1007-1022.
- Mills CM, Srivastava ED, Harvey IM, et al. Smoking habits in psoriasis: a case control study. *Br J Dermatol*. 1992;127:18-21.
- Paton A, Saunders JB. ABC of alcohol: definition. *Br Med J*. 1981;283:1594-1595.
- Khavari KA, Farber PD. A profile instrument for the quantification and assessment of alcohol consumption: the Khavari Alcohol Test. *J Stud Alcohol*. 1978;39:1525-1539.
- Texon M. Medical aspects of an alcoholic service in a general hospital: report of 500 cases. *Q J Stud Alcohol*. 1950;11:205-211.
- Lomholt G. Prevalence of skin disease in a population: a census study from the Faroe Islands. *Dan Med Bull*. Feb 1964;11:1-7.
- Berge G, Lundquist A, Rorsman H, et al. Liver biopsies in psoriasis. *Br J Dermatol*. 1970;82:250-253.
- Delaney TJ, Lepperd B. Alcohol intake and psoriasis. *Acta Derm Venereol*. 1974;54:237-238.
- Grunnet E. Alcohol consumption in psoriasis. *Dermatologica*. 1974;149:136-139.
- Margolis J, Roberts DM. Frequency of skin lesions in chronic drinkers [letter]. *Arch Dermatol*. 1976;112:1326-1327.
- Parish LC, Fine E. Alcoholism and skin disease. *Int J Dermatol*. 1985;24:300-301.
- Chaput JC, Poynard T, Naveau S, et al. Psoriasis, alcohol, and liver disease. *Br Med J*. 1985;291:25.
- Morse RM, Perry HO, Hurt RD. Alcoholism and psoriasis. *Alcohol Clin Exp Res*. 1985;9:396-399.
- Monk BE, Neil SM. Alcohol consumption and psoriasis. *Dermatologica*. 1986;173:57-60.
- Lindgard B. Diseases associated with psoriasis in a general population of 159,200 middle-aged, urban native Swedes. *Dermatologica*. 1986;172:298-304.
- Stern RS, Lange R. Cardiovascular disease, cancer, and cause of death in patients with psoriasis: 10 years' prospective experience in a cohort of 1380 patients. *J Invest Dermatol*. 1988;91:197-201.
- Braathén LR, Botten G, Bjerkedal T. Psoriatics in Norway: a questionnaire study on health status, contact with paramedical professions, and alcohol and tobacco consumption. *Acta Derm Venereol Suppl (Stockh)*. 1989;142:9-12.
- Zamboni S, Zanetti G, Grosso G, et al. Dietary behaviour in psoriatic patients. *Acta Derm Venereol Suppl (Stockh)*. 1989;146:182-183.
- Poikolainen K, Reunala T, Karvonen J, et al. Alcohol intake: a risk factor for psoriasis in young and middle-aged men. *Br Med J*. 1990;300:780-783.
- Naldi L, Parazzini F, Brevi A, et al. Family history, smoking habits, alcohol consumption and risk of psoriasis. *Br J Dermatol*. 1992;127:212-217.
- Higgins EM, Peters TJ, duVivier AW. Smoking, drinking and psoriasis. *Br J Dermatol*. 1993;129:749-750.
- Duffy DL, Spelman LS, Martin NG. Psoriasis in Australian twins. *J Am Acad Dermatol*. 1993;29:428-434.
- Gupta MA, Schork NJ, Gupta AK, et al. Alcohol intake and treatment responsiveness of psoriasis: a prospective study. *J Am Acad Dermatol*. 1993;28:730-732.
- Poikolainen K, Reunala T, Karvonen J. Smoking, alcohol and life events related to psoriasis among women. *Br J Dermatol*. 1994;130:473-477.
- Poikolainen K, Karvonen J, Pukkala E. Excess mortality related to alcohol and smoking among hospital-treated patients with psoriasis. *Arch Dermatol*. 1999;135:1490-1493.
- Naldi L, Peli L, Parazzini F. Association of early-stage psoriasis with smoking and male alcohol consumption. *Arch Dermatol*. 1999;135:1479-1484.
- Rosset M, Oki G. Skin diseases in alcoholics. *Q J Stud Alcohol*. 1971;32:1017-1024.
- Huriez C, Desmons F, Benoit M, et al. Liver biopsy in eczema and dermatoses. *Br J Dermatol*. 1957;69:237-244.
- Higgins EM, du Vivier AW. Alcohol and the skin. *Alcohol Alcohol*. 1992;27:595-602.
- Higgins EM, du Vivier AW. Cutaneous disease and alcohol misuse. *Br Med Bull*. 1994;50:85-89.