Association of Dermatoses with Duration and Quantum of Alcohol Intake: A Comparative Cross-sectional Study

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Abstract

Background: Chronic alcohol intake impacts skin directly, through organ dysfunction or by modifying preexisting dermatoses. However, dermatoses afflicting chronic alcoholics figure in a few studies only. Aim: This study aims to correlate the spectrum of dermatoses in chronic alcoholics with the quantum/duration of alcohol intake and raised liver transaminases. Materials and Methods: Adult males, totaling 196, ascertained to fulfill the Royal College of Psychiatry criteria for chronic alcoholism by the de-addiction center and referred for dermatological consult were enrolled as cases, and similar number of age-/sex-matched teetotallers, as controls. Data emanating from detailed history, clinical examination, and routine liver functions tests were summarized and subsequently analyzed, including statistically using the Chi-square, independent “t” and Spearman’s rank correlation tests, and compared with data from previous studies. Results: Majority (104) drank 41–50 units of alcohol/week since 3–40 (mean: 20.01 ± 9.322) years. Generalized pruritus (odds ratio [OR]: 31.15, P < 0.001), xerosis (OR: 3.62, P = 0.008), and seborrheic dermatitis (OR: 12.26, P < 0.001) were significantly more common in cases than controls. Infections (73; 37.2%), eczemas (45; 22.9%), and generalized hyperpigmentation (28; 14.2%) were the major presenting complaints. Spider nevi, gynecomastia, and pellagroid dermatitis were present in 34 (17.3%), 19 (9.7%), and 8 (4.1%) respectively exclusively in cases only. Commonly seen systemic abnormalities were an alcoholic liver disease (45; 22.9%), diabetes mellitus (23; 11.7%), and peripheral neuropathy (19; 9.7%). Conclusion: Knowledge of cutaneous manifestations of chronic alcoholism could prompt in-depth history taking of alcohol intake, lead to specialist referral and thereby enable timely de-addiction, hopefully before serious adversities in the chronic alcoholics.

Key Words: Alcohol abuse, chronic alcoholics, liver damage, skin manifestations

Introduction

Alcoholism is a multifactorial-genetically predisposed, environmentally and psychosocially influenced-chronic progressive, potentially fatal disease characterized by a tolerance of and physical dependency on ethanol drinking identifiable by impaired control over drinking, preoccupation with drinking alcohol despite continued adverse consequences, and distortions in thinking and/or diverse organ dysfunction. “At-risk” drinking—the level that may over time lead to adverse health consequences—is >14 drinks/week or >4 drinks per occasion in men, and >7 drinks/week or >3 drinks/occasion in women. Intake of chronic high alcohol deserves greater attention as a public health problem than any other intoxicant as it affects society rather than just the individual.

Alcohol impacts skin directly or through organ dysfunction. It may also modify the prevalence, presentation, severity, and responsiveness to therapy of some preexisting dermatoses—such as psoriasis, rosacea,
and seborrheic dermatitis—relatively earlier than the appearance of classical stigmata of liver damage.[3,4]

Alcohol-induced vasodilation and centrally altered vasomotor control of dermal vasculature produce the hallmark spider telangiectases. Pinpoint telangiectases, ecchymoses, palmar erythema, corkcrew scleral vessels, caput medusae, etc., can all occur. Pruritus is common, often manifesting solely by excoriations. Urticarial and anaphylactoid reactions, within minutes to hours of alcohol intake, and hyperpigmentation have also been associated.[5]

Alcohol-induced malnutrition may be primary, due to displacement of essential nutrients from the diet, or secondary, to malabsorption and hepatic cellular injury and may manifest as protein/calorie deficiency syndromes of kwashiorkor/marasmus and deficiencies of specific nutrients and/or trace elements, namely, phrynoderma, xerosis, angular stomatitis, cheilosis, glossitis, seborrhea-like dermatitis, pellagra, and scurvy. Malnutrition also contributes to increased rate of infection in alcoholics as do increased propensity to trauma and suppressed immunity.

As regards endocrine changes in male alcoholics, hypogonadism manifests by the loss of libido, impotence, testicular atrophy, reduced fertility, reduced facial hair growth, etc., and hyperestrogenism, by gynecomastia, vascular spiders, changes in fat distribution, loss of body hair, and female distribution of pubic hair.

The patients of alcoholism, in common with those of any other substance abuse, even when asked, seldom acquiesce and the treating dermatologists, often unaware, are usually reluctant to ask. The resultant delay or absence of consultation with a specialist leads to nonaddressal of alcohol abuse and perpetuation of its related morbidity.[3,4]

While countless surveys regarding harmful systemic effects of chronic alcoholism exist in the literature, the dermatological spectrum thereof is seldom documented. The present study aims to bridge this gap.

Materials and Methods

We enrolled 196 males (>18 years) attending the de-addiction center (of our charitable tertiary care hospital run by a trust) fulfilling the criteria of Royal College of Psychiatry[6] for chronic drinking, i.e., >20 units (1 unit = 10 ml of pure alcohol) of alcohol/week and referred for dermatological consult; lack of alcoholism in our semi-urban study population from the state of Maharashtra (India) precluded enrollment of female cases. After clearance by the institutional ethical committee, written informed consent of the patients was obtained, and they were subjected to detailed history taking, clinical examination, liver function testing, and blood sugar profile. Complete hemogram, renal function tests, anti-human immunodeficiency virus (HIV)/hepatitis B surface antigen antibodies, and histopathological examination were carried out where required. Data were tabulated, classified, and compared with a similar number of age-/sex-matched teetotalers attending dermatology outpatient department. Chi-square, independent "t" and Spearman’s rank correlation tests were performed using the Statistical Package for the Social Sciences version 22 (SPSS Inc., Chicago, IL, USA) as appropriate. A post hoc power analysis with the program G*Power[7] was carried out with α set at 0.05. A two-tailed P ≤ 0.05 was considered statistically significant.

Results

The age of our study patients ranged from 24 to 65 (mean: 43.30 ± 8.926) years. Their alcohol intake/week was 22–77 (mean: 39.51 ± 7.7.69) units spanning 3–40 (mean: 20.01 ± 9.322) years. Dermatologist consultation was sought approximately 2 months after onset by a majority (128; 59.5%) of cases. Smoking was practiced by 106 (54.1%) patients and 94 (47.9%) controls; 65 (33.2%) cases and 59 (30.1%) controls chewed tobacco [Table 1].

Involvement of skin, skin and mucosa, and (only) mucosa was present in 182 (92.9%), 34 (17.3%), and 14 (7.1%) patients, respectively.

Generalized pruritus was significantly more in cases (135; 68.7%) than in controls (13; 6.63%, odds

| Table 1: Epidemiological data |
|-------------------------------|
| **Units of alcohol/week**     |
| 21-30                        | 32 |
| 31-40                        | 58 |
| 41-50                        | 104|
| 51-60                        | 1  |
| 61-70                        | 0  |
| 71-80                        | 1  |
| **Duration of alcohol intake in years** |
| 1-10                         | 53 |
| 11-20                        | 57 |
| 21-30                        | 72 |
| 31-40                        | 14 |
| **Duration of dermatoses**   |
| <2 weeks                     | 23 |
| 2 weeks to 2 months          | 45 |
| >2 months                    | 128|
| **Smoking**                  |
| Tobacco                      | 65 |
| Hypertension                 | 15 |
| Diabetes mellitus            | 23 |
| Tuberculosis                 | 5  |
ratio [OR: 31.15, \( P < 0.001 \)], a post hoc power analysis revealed the two-tailed power to be >99%. History of photosensitivity was given by 13 (6.6%). Infections were the presenting complaint in 73 (37.2%) patients and comprised bacterial (28; 38.4%), fungal (27; 36.9%), and viral (18; 24.7%) [Table 2]. Bacterial infections were more significant in cases than controls (28 vs. 10, OR: 3.1, \( P = 0.002 \)) as a group, rather than as specific entities; this too was associated with a favorable post hoc power of 92.6%. The increased prevalence of superficial fungal infections in controls (41; 48.8%) than in cases (27; 36.9%) was not statistically significant. Of the 24 (12.2%) cases with infestations, 23 (95.8%) had scabies; remaining one, pediculosis.

Forty-five (22.9%) patients suffered from eczema [Table 3]; the most common, seborrheic, seen in 22 (48.9%) was, surprisingly, related inversely to duration of alcohol intake (12 ± 6.094 vs. 21.02 ± 9.179 years, \( P < 0.001 \)), i.e., more in those with lesser years of intake and of lesser age (35.68 ± 5.093 vs. 44.26 ± 8.852 years; \( P < 0.001 \)) [Table 4]. It was also more significant in cases (22) than controls (2, OR: 12.26, \( P < 0.001 \)) (post hoc power >99%).

Generalized hyperpigmentation was the most common (28; 14.2%) of the pigmentary disorders and was significantly correlated with the patients’ age (47.25 ± 8.686 vs. 42.64 ± 8.819 years, \( P = 0.011 \)), units/week (43.95 ± 4.377 vs. 38.77 ± 7.97, \( P < 0.001 \)), and the duration (24.0 ± 7.736 vs. 19.35 ± 9.417 years, \( P = 0.007 \)) of alcohol intake. Analysis revealed the post hoc power to be >99%.

Xerosis was significantly more common in patients than in controls (17 vs. 5, OR: 3.62, \( P = 0.008 \)) (post hoc power: 84.7%) and was significantly associated with the duration (25.65 ± 6.819 vs. 19.47 ± 9.365 years, \( P = 0.002 \)) as well as the weekly alcohol intake (44.23 ± 4.026 vs. 39.06 ± 7.895 units, \( P < 0.001 \)). Thirteen out of the 17 (76.5%) patients with xerosis also had pruritus.

Four (2%) patients presented with erythroderma: Two, secondary to psoriasis; remaining two, idiopathic. Psoriasis, also seen in another 21 (10.7%) cases, was significantly associated with the duration (26.81 ± 8.542 vs. 19.19 ± 9.097 years, \( P < 0.001 \)) and inversely with alcohol intake per week: Those drinking less (32.08 ± 6.249 vs. 40.40 ± 7.463 units, \( P < 0.001 \)) being more susceptible. Post hoc power for the above findings was found to be >99%.

Abnormalities directly due to alcohol abuse seen were spider nevi, in 34 (17.3%); gynecomastia, in 19 (9.7%); and pellagroid dermatitis, in 8 (4.1%) [Table 3]; none of these occurred in controls. A statistically significant association emerged between spider nevi and the mean duration (24.15 ± 8.486 vs. 19.14 ± 9.28 years, \( P = 0.004 \)) and quantum (44.85 ± 7.802 vs. 38.39 ± 7.303 units/week, \( P < 0.001 \)) of alcohol intake as well as raised transaminases (26; 76.5%, \( P < 0.001 \)).

Gynecomastia, too, was significantly associated with the quantum of alcohol (43.20 ± 4.318 vs. 39.27 ± 7.889 units/week, \( P = 0.011 \)) and increased liver transaminases (11 vs. 1, \( P < 0.001 \)) but not with the duration of alcohol consumption. The presence of pellagroid dermatitis was significantly associated only with the quantum of alcohol (45.74 ± 4.504 vs. 39.25 ± 7.775 units/week, \( P = 0.02 \)). Statistical analysis of the above revealed their post hoc power to be >99%.

Oral changes were observed in 14 (7.1%) patients: glossitis (7; 50%), being the most frequent. The most common of the nail changes was nail plate discoloration (64; 32.7%). Of the 76 (38.8%) cases of alopecia, 62 (81.6%) had diffuse and 14 (18.4%), patchy.

Systemic abnormalities commonly seen were an alcoholic liver disease (45; 22.9%), diabetes mellitus (23; 11%),

| Infections               | Cases, n (%) | Controls, n (%) |
|--------------------------|-------------|-----------------|
| Fungal                   | 27 (13.8)   | 41 (20.9)       |
| Oral candidiasis         | 4 (2)       | 0               |
| Pityriasis versicolor    | 10 (5.1)    | 10 (5.1)        |
| Tinea pedis              | 3 (1.5)     | 4 (2)           |
| Tinea corporis           | 6 (3)       | 11 (5.6)        |
| Tinea cruris             | 3 (1.5)     | 6 (3)           |
| Balanoposthitis          | 1 (0.5)     | 8 (4.1)         |
| Tinea faciei             | 0           | 2 (1)           |
| Bacterial                | 28 (14.3)   | 10 (5.1)        |
| Lupus vulgaris           | 2 (1)       | 0               |
| Cellulitis               | 4 (2)       | 2 (1)           |
| Ecthyma gangrenosum      | 1 (0.5)     | 0               |
| Hansen disease           | 4 (2)       | 6 (3)           |
| Folliculitis             | 4 (2)       | 2 (1)           |
| Furuncle                 | 3 (1.5)     | 0               |
| Gangrene                 | 2 (1)       | 0               |
| Erysipelas               | 1 (0.5)     | 0               |
| Pitted keratolysis       | 6 (3)       | 0               |
| Necrotizing fascitis     | 1 (0.5)     | 0               |
| Viral                    | 18 (9.1)    | 12 (6.1)        |
| HIV                      | 12 (6.1)    | 0               |
| Herpes zoster            | 4 (2)       | 0               |
| Herpes simplex           | 1 (0.5)     | 2 (1)           |
| Molluscum                | 1 (0.5)     | 3 (1.5)         |
| contagiosum              |             |                 |
| Viral exanthem           | 0           | 3 (1.5)         |
| Warts                    | 4 (2)       |                 |
| Infestations             | 24 (12.2)   | 21 (10.7)       |
| Scabies                  | 23 (11.7)   | 21 (10.7)       |
| Pediculosis              | 1 (0.5)     | 0               |
Sharma, et al.: Association of dermatoses with alcohol intake

Discussion

Our study population, like of other studies, comprised mostly of young to middle-aged adults. However, unlike the previous study by Rao, majority (176; 89.8%) had been imbibing alcohol longer (>10 years) and ≥ four times. More than half (106; 54.1%) smoked cigarettes (106; 54.1%) and a third (65; 33.2%), chewed tobacco, habits reported almost in a similar proportion by Rao. The delay in reporting (>2 months) for consultation with a dermatologist by the majority of our cases could indicate their disregard for self.

Duration and quantum of alcohol consumption had no relationship with each other, those drinking over a longer duration, not necessarily imbibing a significantly greater quantum.

Spider nevi seen in 34 (17.3%) were significantly associated with duration and quantum of alcohol intake as well as increased transaminases. Their emergence as a reliable clinical marker of alcohol consumption as well as of liver damage was corroborative of their similar eminence in previous studies.

Pruritus detected in 135 (68.7%) of our cases solely by the presence of excoriations was higher than the estimated occurrence in 40% of patients with liver disease. Pruritus, known to precede the development of cirrhosis by several years, did not correlate significantly with either the amount or the duration of alcohol intake in our study.

Out of the multiple nail changes, mostly nonspecific, the well-known changes of clubbing and Terry's nails are reported in 15% and 80% of cirrhotics in the literature. Nail bed discoloration, pitting, and longitudinal ridging seen in 64 (32.7%), 28 (14.5%), and 7 (3.6%) patients

Table 3: Comparison of dermatoses other than infections in cases and controls

| Cause                                      | Dermatoses          | Cases, n (%) | Controls, n (%) |
|--------------------------------------------|---------------------|--------------|-----------------|
| Liver disease                              | Generalized pigmentation | 28 (14.3)   | 0               |
|                                            | Perioral pigmentation   | 3 (1.5)     | 0               |
|                                            | Palmar creases pigmentation | 1 (0.5)   | 0               |
| Immunosuppression with nutritional deficiency | Mycosis fungoides   | 1 (0.5)     | 1 (0.5)         |
|                                            | Squamous cell carcinoma | 4 (2)      | 0               |
| Cholestasis                                | Pruritus             | 135 (68.9)  | 13 (6.6)        |
| Vasodilation                               | Spider naevi         | 27 (13.8)   | 0               |
|                                            | Palmar erythema       | 2 (1)       | 0               |
|                                            | Flushing              | 1 (0.5)     | 0               |
| Exacerbation of preexisting dermatoses      | Psoriasis            | 21 (10.7)   | 14 (7.1)        |
|                                            | Rosacea              | 3 (1.5)     | 0               |
|                                            | Seborrheic dermatitis | 22 (11.2)  | 2 (1)           |
|                                            | Nummular dermatitis   | 2 (1)       | 0               |
|                                            | Erythoderma           | 4 (2)       | 1 (0.5)         |
| Nutritional deficiency                     | Pellagroid dermatitis | 8 (4.8)     | 0               |
|                                            | Ulcers               | 5 (2.5)     | 0               |
|                                            | Xerosis              | 17 (8.7)    | 5 (2.5)         |
| Hyperestrogenism and hypogonadism          | Gynecomastia         | 19 (9.7)    | 0               |
| Allergic reaction to a component of beverage | Urticaria          | 4 (2)       | 0               |
| Miscellaneous                              | Drug rash            | 2 (1)       | 0               |
|                                            | Palmoplantar keratoderma | 1 (0.5)  | 2 (1)           |
|                                            | Acne keloidalis nuchae | 2 (1)     | 0               |
|                                            | Erythema multiforme   | 2 (1)       | 0               |
|                                            | Lichen planus         | 1 (0.5)     | 4 (2)           |
|                                            | Infected eczema       | 3 (1.5)     | 0               |
|                                            | Allergic contact dermatitis | 4 (2)  | 14 (7.1)        |
|                                            | Lichenoid dermatitis  | 5 (2.5)     | 4 (2)           |
|                                            | Irritant contact dermatitis | 1 (0.5) | 5 (2.5)         |
|                                            | Stasis dermatitis     | 8 (4)       | 0               |

and peripheral neuropathy (19; 9.7%). Serum bilirubin, aspartate transaminase, and alkaline phosphatase were raised in 58 (29.6%), 51 (26.0%), and 47 (24.0%) cases, respectively.
respectively in our study were banal. Terry’s nails occurred in 7 (3.6%) of our cases but were seen neither in the study by Rao nor in the Brazilian one. Clubbing of fingernails, seen in 10 (5.1%) of our cases, was reported in 16% of his patients by Rao.

Our study reaffirms the significance of generalized hyperpigmentation as a marker for the duration as well as the quantity of alcohol intake. However, periorbital (3; 1.5%) and palmar crease pigmentation (1; 0.5%) were uncommon as was the case in an earlier Indian study.

There was no association between the presence of squamous cell carcinoma (4; 2%) and tobacco or alcohol intake, possibly due to the small size of our study. The solitary case of basal cell carcinoma in our study population, too, may be corroborative of its lack of association with chronic alcoholism.

Glossitis, which possibly occurs due to Vitamin B deficiency, was the most common (7; 3.6%) oral change observed; its incidence in the previous Indian study was 7%. The typical lingual syndrome consisting of a thickened tongue, atrophy of the lingual mucosa and lacquer edges was not seen in our study.

Generalized xerosis was the most common of the probable alcohol-induced deficiency disorders in our study as well as that of Parish and Fine. Its significant association with both the duration and amount of alcohol intake should raise an alert for other signs of liver damage. Our study also found eight (4%) patients suffering from pellagroid dermatitis. The previous Indian study did not record any case of this deficiency disease.

The significant association of pellagra with the amount of alcohol intake is probably consequent to primary malnutrition.

The prevalence of gynecomastia seen in 19 (9.7%) in our study was detected to be 7% in his study by Rao. The significant association of gynecomastia with the quantum, rather than the duration, of alcohol in our study, could probably be related to the direct inhibitory effect of ethanol on the testicular germinal epithelium as well on the increased metabolic clearance rate of testosterone. The significant association of gynecomastia with increased liver enzymes could be due to increased peripheral conversion of androstenedione to estrone and of testosterone to estradiol and may be related to changes in microsomal enzymes due to liver damage.

Almost half of our cases had either an infection or an infestation; scabies, the most common, followed by HIV and pityriasis versicolor. The prevalence of bacterial (28; 14.3%) and dermatophytic (12; 6%) infections was slightly higher than that observed by Rao (9% and 4.5%) while the prevalence of pityriasis versicolor was lower (10; 5.1% vs. 28; 14%). In the Brazilian study, only 2.8% of patients were found to have scabies, much less than our study (23; 11.7%), but the prevalence of tinea pedis (26.32%) was much more (3; 1.5%). The lesser incidence of scabies could probably be due to

| Table 4: Dermatoses associated with duration (years) and quantum (units/week) of alcohol intake |
|---------------------------------|----------------|-----------|----------------|-----------|
| Dermatoses                      | Alcohol intake (years) | P         | Alcohol intake (units/week) | P         |
| Xerosis                         | Present           | 25.65±6.819 | 0.002         | 44.23±4.026 | <0.001 |
|                                 | Absent            | 19.47±9.365 | <0.001         | 39.06±7.895 | Not significant |
| Seborrheic dermatitis           | Present           | 12±6.094    | 0.007         | 36.86±7.808 | <0.001 |
|                                 | Absent            | 21.02±9.179 | <0.001         | 39.85±7.721 | Not significant |
| Generalized hyperpigmentation   | Present           | 24.0±7.736  | 0.001         | 43.95±4.377 | <0.001 |
|                                 | Absent            | 19.35±9.417 | 0.001         | 38.77±7.97  | Not significant |
| Psoriasis                       | Present           | 26.81±8.542 | 0.001         | 32.08±6.249 | <0.001 |
|                                 | Absent            | 19.19±9.097 | 0.001         | 40.40±7.463 | Not significant |
| Spider nevi                     | Present           | 24.15±8.486 | 0.004         | 44.85±7.802 | <0.001 |
|                                 | Absent            | 19.14±9.28  | 0.004         | 38.39±7.303 | Not significant |
| Gynecomastia                    | Present           | 24.92±9.070 | Not significant | 43.20±4.318 | 0.011 |
|                                 | Absent            | 19.69±9.272 | 0.011         | 39.27±7.889 | 0.02  |
| Pellagroid dermatitis           | Present           | 15.88±9.717 | Not significant | 45.74±4.504 | 0.2  |
|                                 | Absent            | 20.19±9.291 | Not significant | 39.25±7.775 | 0.2  |
to the better socioeconomic standard of the Brazilians, while higher incidence of tinea pedis, probably due to their increased use of closed footwear.

Our study had more psoriatics (21; 10.7%) than that in the Brazilian study (6%).[2,8] However, the similar prevalence of psoriasis in cases and controls (OR: 1.56, P = 0.21) could be due to a lot of referrals to our tertiary center. The significant association of psoriasis with the duration of alcohol intake and inversely with the amount of alcohol consumption in our study is surprising[17] and probably indicates that chronicity, rather than the quantum, of alcohol intake predisposes, through unknown mechanisms, to the development of psoriasis thereby directly contradicting the findings of the study by Chaput et al. in whose study, 5.3% of cirrhotics drinking >50 g alcohol/day had psoriasis compared to only 0.7% cirrhotics drinking <50 g.[18]

The rarity of rosacea (3; 1.5%) in ours as well as in some earlier studies[2,8,15] could be because of the tendency of rosacea patients to avoid alcohol entirely because of the uncomfortable flushing.

The prevalence (22; 11.2%) of seborrheic dermatitis in our study and an earlier Indian study (11.5%)[6] was less than in the Brazilian (15.8%) study.[9] The significantly higher risk of seborrheic dermatitis (OR: 12.26) in alcoholics, as compared to controls, could be due to vitamin B deficiency presenting as seborrhoea-like dermatitis; Its significant inverse association with the duration of alcohol intake and patients’ age could be explained by its occurrence in the typical distribution in the younger age group.

Conclusion

Spider nevi, generalized hyperpigmentation, and generalized xerosis emerged to be associated with the duration as well as the quantum of alcohol intake in this study. Spider nevi, in addition, were also associated with raised transaminases. In contrast, pruritus—a very common marker that occurs before onset of liver damage—was associated neither with the duration nor the quantum of alcohol intake. The association of gynecomastia with raised liver enzymes and amount, rather than the duration, of alcohol intake in our study, probably indicates that binge drinking, rather than chronic intake, may lead to liver damage sufficient enough to cause gynecomastia. In contrast, the presence of psoriasis was associated with a longer duration as well as a lesser quantum of alcohol intake. Seborrheic dermatitis, as expected, appeared more frequently in the younger alcoholics.

However, small sample size, nonreliable history of alcohol intake and the inability to completely eliminate the confounding bias due to factors such as smoking, tobacco, and HIV infection, are the limitations of this study.

Familiarization with the broad spectrum of these dermatoses would: First, allow early detection, second, facilitate proactive inquiry by the dermatologist regarding alcohol abuse from the patient, and finally, probable timely mitigation, if not elimination, of this substance abuse hopefully before irreversible liver damage and adverse consequences—medical/accident-related.

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Conflicts of interest
There are no conflicts of interest.

What is new?
- Generalized pruritus, xerosis, and seborrheic dermatitis were significantly more common in cases than controls
- Generalized hyperpigmentation and xerosis correlated significantly with the duration as well as the quantum of alcohol intake
- Spider nevi, gynecomastia, andpellagroid dermatitis were seen exclusively in alcoholics.

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