

## INVESTIGATIVE REPORT

# Seborrhoeic Dermatitis in the Elderly: Inferences on the Possible Role of Disability and Loss of Self-sufficiency

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The constant increase of life expectancy in countries with high standards of living raises growing concern about many aspects of skin morbidity in the elderly. As regards seborrhoeic dermatitis, literature yields prevalence estimates for elderly people that are consistently higher than those reported from the general population. This prompts speculations on whether factors inherently involved in senescence might have some role in the course of seborrhoeic dermatitis. In a series of 186 subjects, aged  $\geq 65$ , strength of association of the skin disorder with age, sex, coexisting non-cutaneous conditions, and degree of loss of self-sufficiency in activities of daily living (ADL index) was evaluated by univariate and multivariate analysis. We found that age (OR: 1.14;  $p < 0.001$ ) and, more importantly, dependency in more than one ADL (OR: 30.2;  $p < 0.0001$ ) were independent explanatory variables of seborrhoeic dermatitis. These findings suggest that senescence *per se* might have some significance in the natural history of this type of eczema. **Key words:** seborrhoeic dermatitis; old age; senescence; disability; ADL index; odds ratio.

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Seborrhoeic dermatitis (SD) is commonly described as a chronic, inflammatory and scaling disorder affecting the skin on the head and other sites with rich sebaceous gland supply. Type and mode of action of factors promoting and sustaining the course of SD have partly eluded investigators to date (1). Clinicians vary in their concept of SD and in their propensity to diagnose the condition. These circumstances have probably made it difficult to obtain powerful estimates of the prevalence of SD, which in most textbooks of dermatology is set at between 1 and 5% in the general population (2–5). However, it is worth underlining that several studies have yielded consistently higher rates among elderly subjects (6–10).

Against this background, an association of SD with age-related pathophysiological processes interfering directly with sebaceous gland activity might therefore

be advocated. Yet, in aged persons, sebocyte turnover is not increased, but rather decreased in both SD sufferers (11) and unaffected individuals (12, 13). On the other hand, the ability of aging *per se* to increase the frequency of skin disease by introducing changes in the everyday life of the elderly (as concerns, for instance, time spent in outdoor and/or social activities, adequacy of food intake and care in personal hygiene) has to date never been investigated.

The aims of the present study were a) to estimate the rate of occurrence of SD in a series of aged patients, and b) to investigate whether age-related decrease of overall self-sufficiency and functional reserve may be predictive of the presence of the skin condition.

## PATIENTS AND METHODS

The study was performed at the university hospital of Foggia (South Italy) serving approximately 200 000 inhabitants. Patients aged  $\geq 65$  years admitted to the dermatology and geriatrics outpatient units were consecutively included over a period of 6 months (January to June). In total, 186 patients were enrolled (Table I).

In all subjects, a thorough history was preliminarily taken for associated non-cutaneous illnesses. Moreover, complete skin examination was carried out to detect the presence/absence of SD. In this regard, considering the wide variability in clinical expression and clinicians' readiness to recognize the skin condition, seborrhoeic dermatitis was diagnosed only when there was complete agreement between two independent observers (MM and AD).

Assessments of age-related loss of self-sufficiency were performed by one of us (GV, who was unaware of findings on dermatological examination) using the Activities of Daily Living (ADL) index, an instrument that has been found to have adequate reliability and validity in the elderly for assessing an individual's overall degree of disability (14). In detail, the ADL index focuses upon the following six personal maintenance tasks: hygiene, dressing and undressing, mobility, ability to go to the toilet, bowel and bladder continence, and food intake. The ability to perform each function is scored 1 to 0. On this basis, the global performance is scored from 6 (when the subject is independent in all functions) to 0 (when the subject is dependent in all respects). Consequently, the lower the ADL rating obtained, the lower the level of the subject's self-sufficiency and functional reserve.

## Statistical analysis

Patients found to have SD were compared with those free from the skin condition. Basic descriptive statistics of the study population were expressed as mean values  $\pm$  SD, median

Table I. Characteristics of the study population: univariate analysis of clinical findings and disability in performing activities of daily living (ADL)\*

	Total (n=186)	Seborrhoeic dermatitis		P value
		Present (n=43)	Absent (n=143)	
Age (years)	73.9±5.9	78.9±4.3	72.3±5.4	<0.0001
Men/women	86/100	26/17	60/83	<0.05
Associated non-cutaneous conditions				
Hypertension	141	31 (72%)	110 (77%)	NS
Coronary artery disease	37	9 (21%)	28 (20%)	NS
Diabetes mellitus	24	5 (10%)	19 (13%)	NS
Other	63	13 (30%)	50 (35%)	NS
ADL index (0–6)				
Global ratings	5.5 (5–6)	4 (4–5)	6 (5–6)	
<5 (2 or more dependencies)	24 (12.9%)	22 (51.2%)	2 (1.4%)	<0.0001
≥5 (0 or 1 dependency)	162 (87.1%)	21 (48.8%)	141 (98.6%)	

\*Data are expressed as mean values±SD, median values with 25th–75th percentiles or proportions, as appropriate. NS, not statistically significant ( $P>0.05$ ).

values with 25th–75th percentiles or proportions, as appropriate. For all data analysis, SD was included as the response variable, while age, gender, associated non-cutaneous conditions and degree of patients' loss of self-sufficiency (ADL) were considered as independent variables. ADL ratings were processed as a dichotomous variable as follows:  $\geq 5$  (subject totally independent or dependent in only one function) and  $< 5$  (subject with two or more dependencies).

Analyses of potential association between SD and the independent variables were initially performed using univariate logistic regression for age, gender and ADL, and  $\chi^2$  test for associated non-cutaneous conditions. All variables with a univariate  $P$  value  $< 0.05$  were included as candidate explanatory variables in a multiple logistic regression analysis.

## RESULTS

In all, 186 subjects (mean age, 73.9 years; range, 65–89; male to female ratio, 0.86) were enrolled (Table I). On physical examination, SD was detected in 43 cases (23.1%). As regards affected skin sites, the face was involved in all cases, while active lesions on the scalp and trunk were detected only in 21 (48.8%) and 8 cases (18.6%), respectively. Of note, skin complaints on seborrhoeic areas were the reason for seeking medical consultation in only a minority of patients (25.6%), the others attended for different skin afflictions (more frequently consisting of moles, senile purpura, cherry angiomas, acrochordons, seborrhoeic keratoses, actinic keratoses, epitheliomas, contact dermatitis, stasis dermatitis, or generalized pruritus).

On univariate analysis, patients with SD differed significantly from unaffected individuals in terms of both age ( $78.9 \pm 4.3$  vs  $72.3 \pm 5.4$ ;  $p < 0.0001$ ) and male to female ratio (26/17, i.e. 1.53, vs 60/83, i.e. 0.72;  $p < 0.05$ ). On the other hand, the proportion of subjects with associated non-cutaneous conditions was not significantly different from that observed among SD free subjects ( $p > 0.05$ ). All patients also successfully completed the questionnaire evaluating ADL items (as described above) by either answering questions directly,

or with the aid of a supportive partner, relative or own caregiver personnel. As shown in Table I, median ADL ratings were 4 and 6 in patients with and without SD, respectively. Of note, subjects with SD were more likely to have an ADL score  $< 5$ , indicating dependence in two or more functions (51.2 vs 1.4 %;  $p < 0.0001$ ).

Odds for SD were also assessed with multiple logistic regression analysis for variables with univariate  $p < 0.05$  (Table II). The procedure demonstrated that age (odds ratio [OR]: 1.14; 95% confidence interval [95% CI]: 1.04–1.25;  $p < 0.001$ ) and ADL  $< 5$  (OR: 30.15; 95% CI: 5.83–155.95;  $p < 0.0001$ ) were independent explanatory variables of SD. By contrast, gender (male) was found to have no significant predictive ability ( $p > 0.05$ ).

## DISCUSSION

In the present study of 186 subjects aged  $\geq 65$  years, 43 (23.1%) had SD. Along with age, the degree of disability and loss of self-sufficiency were the most important independent predictive variables of the skin condition.

Consistently higher ratings of SD prevalence have been obtained in several surveys carried out through the geriatric age span. To cite some examples, the following estimates have been reported: 7%, plus a noticeable 44% of 'pityriasis capitis', by Weismann et al. (6); 8%, by Thaipisuttikul (7); 10.5% by Beauregard & Gilchrest (8); 31% by Tindall (9); and  $> 67\%$  by

Table II. Logistic regression analysis for prediction of seborrhoeic dermatitis

	Odds ratio (95% CI)	P value
Age	1.14 (1.04–1.25)	<0.001
Sex (male)	2.31 (0.91–5.89)	NS
ADL (<5)	30.16 (5.83–156)	<0.0001

ADL, activities of daily living; NS, not statistically significant.

Kligman (10). On the basis of the above data and our present findings, we think that a more or less specific association between SD and senescence might be taken into consideration.

A high number of health afflictions have been reported to run their course in association with SD (such as malignancies, cardiovascular, neurological or psychiatric disorders) (15–18), but often the data currently available do not seem robust enough to clarify the real nature, and significance (if any) of the links observed (1). What is quite indisputable is that the strength of most factors involved so far in the course of SD increases significantly throughout the late phase of life. This is certainly the case of mood depression syndromes, immune system impairment and overall morbidity/comorbidity (10, 19, 20). In our opinion, convergence of all these circumstances, more than the intervention of a single promoting factor, might play a role in the increased prevalence of SD in older persons. Considering all these premises, our study was aimed at verifying whether both senescence *per se* (chronological aging) and age-related loss of self-sufficiency (senile frailty) may play some role in this process. We believe that the statistically significant associations observed between occurrence of the skin condition, patients' age and degree of disability, speak in favour of this hypothesis.

Without overlooking the indisputable role of yeast colonization and related immune reactions in the pathogenesis of SD it should be recalled that senescence is a phase in which profound changes occur in everyday life. To varying extents, global 'affective dimension' of elderly persons is often compromised by both medical and psychological handicaps (for instance, retirement and death of partners). This may in turn reflect in a number of circumstances more or less directly favouring occurrence of SD: reduction of time spent in outdoor activities (with consequent decrease of exposure to solar radiation), inadequacy of food intake and care in personal hygiene, and loss of emotional exchange in social activities. In this context, it is interesting to recall the hypothesis of Cowley et al. aimed at explaining the propensity to SD of subjects with Parkinson's disease and other neurological conditions characterized by reduced/abolished mobility (21). They assumed a role of muscle immobility, e.g. mimic musculature, for the pooling of sebum into the pilosebaceous units of the affected dermatomes. In this view, apathy and other denial behaviours leading to reduced mobility of mimic musculature may well be a pathogenetic factor in some aged persons.

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