

Skin Disease in a Geriatric Patients Group in Outpatient Dermatologic Clinic Karlovac, Croatia

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ABSTRACT

To determine the characteristic pattern and frequency of dermatoses in dermatologic patients over 65 years we used electronic data base of General hospital Karlovac and conducted a retrospective cross sectional study evaluating age, sex and proportion of dermatoses. Total number of patients was 3200. There were 822 (25.69%) patients older than 65 years, and 2378 (74.31%) patients aged from 18–64 years. Ratio male/female in population over 65 years in our study was 0.76:1. Males had higher frequency of verrucae vulgares 26 (7.3%) and dermatitis nummularis 47 (13.2%) then female and that difference was statistically significant. Female had higher frequency of keratosis actinica 124 (26.61%) and fibroma 23 (4.94%), and that difference was statistically significant. The ten most common diagnosis in population over 65 years old were: keratosis actinica in 184 patients (22.38%) verrucae seborrhoicae in 156 (18.98%), dermatitis nummularis in 77 patients (9.37%), dermatitis allergica e contactu in 60 (7.30%) patients, mycosis in 56 (6.81%) patients, psoriasis in 51 (6.20%), verrucae vulgares in 39 (4.74%), fibromas in 27 (3.28%), naevi in 9 (1.09%) and acne in 1 (0.12%) patient. The number of patients with diagnosis of keratosis actinica, verrucae seborrhoicae and mycoses in population over 65 years old are greater then in younger subpopulation and that difference was statistically significant. There are specific pattern of frequency of dermatoses in elderly. Verrucae seborrhoica, keratosis actinica and mycoses are more common then in general population. In elderly risk for development of skin cancer is increased. Early detection of skin cancers and treatment of precanceroses is of utmost interest of health providers.

Key words: geriatric dermatoses, skin, ageing

Introduction

An increasing proportion of old population make very important to recognize and appropriately address skin diseases in elderly. Life expectancy is increasing due to widespread advance in health technology as well the percentage of population older then 65 years¹.

There is a projected percentage of 147% increase in the 65-and-over population between 2000 and 2050 in United States of America. Number of people 65 and over in the year 2050 would comprise 21 percent of America's total population at that time. Very similar if not worse situation will be in Croatia and especially in Karlovac county because vital index is 53.9 in Karlovac county^{2,3}.

The average life expectancy in Europe is 79 years for women and 71 years for men, similar data are for Croatia⁴. Croatian population is old. The average age in Croatia increased from 27.9 in 1950 to 39.3 years in Cen-

sus 2001. The percentage of population over 65 years is 19.7% and demographic projections for 2025 show increase up to 27.4%. In Karlovac county the percentage of old people is 19.94%³.

The health care management for elderly is five times more expensive then for younger populations. Old people need more expensive and complex health care, they suffer form more chronic disease and especially cancer. Huge burden for health care system is rising medical cost due to technological development but also aging of entire population⁵.

Dermatologic diseases in elderly are also in increase and their dermatologic demands are largely unmet⁶. Skin problems are frequently diagnosed in older population. Almost 40% of aged 56–75 years had at least one dermatosis compared with 15% in children under age of ten,

83% of people over 80 years had one significant dermatoses^{6,7}.

Molecular basis of aging is not yet fully understood. The free radical theory states that aging results from accumulation of cellular damage caused by excess reactive oxygen.

The role of tumor suppression gene p53 is to induce death of damaged cell (apoptosis) or arrest proliferation (senescence). Accumulation of senescent cell can damage barrier efficacy, sensory perception, immune response, wound healing and deoxyribonucleic acid (DNA) repair. We must distinct process of aging into intrinsic aging caused by passage of time and photoaging caused by solar radiation^{8,9}.

The overall result of age related changes in skin structure and function is increase in skin dryness, decrease of skin elasticity. Also increase of wrinkling, roughness and laxity is present.

In epidermis the epidermal dermal junction flattens, number of interdigitations decreases. Dry and flaky skin is results of decreases of epidermal fillagrin and decrease of epidermal turnover rate to 50%. The number of melanocytes decreases for about 20% and production of D vitamin decrease for 70%⁹.

In dermal part of skin there is decrease of mast cell for 50% and 30% decrease of venular cross sections areas of cutaneous blood flow. Involution of vertical capillary loops in dermal papillae causes pallor, decrease of skin temperature and changes in thermoregulation. Dermal thickness decreases by about 20% and atrophy is present^{8,9}.

Reduced synthesis and faster degradation of collagen contribute to impaired wound healing. Elastic fibers decreases in number and size so there is pronounced less elasticity in aged skin. Alteration of mucopolysaccharides affects skin turgor. The overall volume of subcutaneous fat tissue diminishes^{8,9}.

In aged people hair is usually grey. Male and female alopecia is very common with shortened anagen phase and decreased proliferation of follicular keratinocytes. Excessive and unwanted hair is present in menopausal women due to altered estrogen androgen balance^{8,9}.

Linear growth of nails decreases with aging. Nails become dry and brittle, lamellar dystrophy manifests as brittle nails with split ends. There is a decrease of cutaneous sensory and organs by 33%. Eccrine glands decrease by 15% during adulthood. Sebum production decreases by 23% per decade. The number of Langerhans cells decreases by 20 to 50% and this alteration also contribute to immunologic decline in senescence resulting in increase incidence of infections and skin cancers^{8,9}.

Most skin lesions in elderly patients are keratosis seborrhoica, keratosis actinica (KA) and cherry angioma. KA is less common but this is precancerous lesion and 10% of AK can progress to squamous skin cancer^{8,9}.

Pruritus is very common complain in old population. Natural attrition of sebaceous glands and prolonged ultraviolet irradiation make skin dry and irritable. Atopic

dermatitis, drug rashes and infections can cause pruritus as well in elderly population. The primary circulation skin problem in elderly is venous ulcers and dermatitis stasica. Differential diagnosis arterial, neuropathic ulcera but neoplastic diseases and infectious can be very important too.

Herpes zoster is the most common in old population and it is important to rule out paraneoplastic syndrome.

All skin lesions in old population should be carefully inspected to detect any sign of potential premalignant or malignant skin lesion which present by far the most danger to the elderly^{8–10}.

Materials and Methods

To determine the characteristic pattern and frequency of dermatoses in dermatologic patients over 65 years we used electronic data base of General hospital Karlovac and conducted a retrospective cross sectional study evaluating age, sex and proportion of dermatoses.

Diagnosis for each dermatosis was coded according to the World Health Organization International Classification of Diseases 10th revision (WHO ICD X)¹¹. Diagnosis of each attending patients in period between 1st of January to 30th of June 2009 was retrieved from computer data base. Comparison was made by dividing the study population into two groups: first old group with 65 years or older and younger group 18–64 years old.

The one sample χ -test was used for each disease category and statistical analyses searched for significant deviations from equal distribution to gender and for proportional distribution for each age group. All statistical values were considered significant at the p-level of 0.05. Statistical data analysis was done by Microsoft Excel Statistic Package (Redmond, United States of America).

According the definition of World Health Organization geriatric patients were defined to be 65 years or older. The search category included diagnosis coding, patient's number and gender. Among ten major diagnosis the number of patient aged below 65 years also retrieved and analyzed to make comparison between the elderly.

Results

Total number of patients was 3200. There were 822 (25.69%) patients older than 65 years and 2378 (74.31%) patients in ages 18–64 years.

Male/female ratio in population over 65 years in our study was 0.76:1 (Table 1). Males had higher frequency

TABLE 1
DISTRIBUTION OF PATIENTS ACCORDING AGE AND GENDER

| Age | male | % | female | % |
|-------|------|-------|--------|-------|
| 65+ | 356 | 11.13 | 466 | 14.58 |
| 18–64 | 1030 | 32.19 | 1348 | 42.10 |

of verrucae vulgares 26 (7.3%) and dermatitis nummularis 47 (13.2%) then female and that difference was statistically significant. Female had higher frequency of keratosis actinica 124 (26.61%) and fibroma 23 (4.94%) and that difference was statistically significant. In all other diagnosis there was no statistically significant difference according to gender (Table 2).

The ten most common diagnosis in population over 65 years old were: keratosis actinica in 184 patients (22.38%), verrucae seborrhoicae in 156 (18.98%), dermatitis nummularis in 77 patients (9.37%), dermatitis allergica e contactu in 60 (7.30%) patients, mycosis in 56 (6.81%) patients, psoriasis in 51 (6.20%), verrucae vulgares in 39 (4.74%), fibromas in 27 (3.28%), naevi in 9 (1.09%) and

acne in 1 (0.12%) patient. The number of patients with diagnosis of keratosis actinica, verrucae seborrhoicae, and mycoses in population over 65 years old are greater than in younger subpopulation and that difference was statistically significant. There was no statistical significant difference between analyzed age groups in frequency of dermatitis nummularis.

In population aged 18–64 years there was greater number of patients with following diagnosis: dermatitis allergica e contactu in 363 (15.31%) patients, verrucae vulgares in 419 (17.62%), psoriasis in 239 (10.05%), fibroma 169 (7.14%), naevi 158 (6.64%) and acne vulgaris were present in 180 (17.63%) patients and that was statistically significant difference (Table 3).

TABLE 2
COMPARISONS OF FREQUENCIES OF TEN MOST COMMON DERMATOSES ACCORDING GENDER IN THE ELDERLY

| Diagnosis | male | % | female | % | Statistical significance* |
|---------------------------------|------|-------|--------|-------|---------------------------|
| Verrucae vulgares | 26 | 7.30 | 13 | 2.79 | p<0.05 |
| Dermatitis nummularis | 47 | 13.20 | 30 | 6.44 | p<0.05 |
| Keratosis actinica | 60 | 16.85 | 124 | 26.61 | p<0.05 |
| Fibromata | 4 | 1.12 | 23 | 4.94 | p<0.05 |
| Dermatitis allergica e contactu | 31 | 8.71 | 29 | 6.22 | non significant |
| Psoriasis | 25 | 7.02 | 26 | 5.58 | non significant |
| Verrucae seborrhoicae | 65 | 18.26 | 91 | 19.53 | non significant |
| Naevus dysplasticus | 3 | 0.84 | 6 | 1.29 | non significant |
| Mycoses | 24 | 6.74 | 32 | 6.87 | non significant |
| Others | 71 | 19.96 | 92 | 19.73 | |
| Total | 356 | 100 | 466 | 100 | |

* χ^2 -test; p values of less than 0.05 were considered statistically significant.

TABLE 3
COMPARISONS OF FREQUENCY OF TEN MOST COMMON DERMATOSES ACCORDING AGE

| Diagnosis | Age | | | | Statistic significance* |
|---------------------------|-----------|-------|-------------|-------|-------------------------|
| | 65+ years | | 18–64 years | | |
| | Number | % | Number | % | |
| Keratosis actinica | 184 | 22.38 | 78 | 3.28 | p<0.05 |
| Verrucae seborrhoicae | 156 | 18.98 | 117 | 4.92 | p<0.05 |
| Mycosis | 56 | 6.81 | 65 | 2.73 | p<0.05 |
| Dermatitis nummularis | 77 | 9.37 | 169 | 7.11 | Non significant |
| Dermatitis all e contactu | 60 | 7.30 | 364 | 15.31 | p<0.05 |
| Psoriasis | 51 | 6.20 | 239 | 10.05 | p<0.05 |
| Verrucae vulgaris | 39 | 4.74 | 419 | 17.62 | p<0.05 |
| Fibroma | 27 | 3.28 | 169 | 7.14 | p<0.05 |
| Naevus | 9 | 1.09 | 158 | 6.64 | p<0.05 |
| Acne vulgaris | 1 | 0.12 | 180 | 7.57 | p<0.05 |
| Others | 162 | 19.73 | 420 | 17.63 | |
| Total | 822 | 100 | 2378 | 100 | |

* χ^2 -test; p values of less than 0.05 were considered statistically significant.

Discussion

Skin diseases are more common in the geriatric population than in younger age groups^{10,12,13}. It is hard to have true frequency of dermatoses in elderly population because of thin line between physiological and pathological changes of the skin, moreover different type of populations and diagnostic groups are used in various studies⁷. Our study tried to elucidate specific pattern of skin diseases in Croatian elderly population.

In Taiwan the most common cutaneous disorder were dermatitis 58.7%, fungal infections 38%, pruritus in 14.2%, benign tumors 12.8% and viral infections 12.3%⁶. Cutaneous malignant tumors were present in 2.1%⁶. Sahoo in India found that the commonest dermatoses were: pruritus in 54%, mycoses in 20%, xerosis in 12.5%, keratosis seborrhoica (10%), fibroma (10%) and psoriasis in 9%¹². Very similar results are from Turkey where five most frequent skin disease in were eczema (20.4%), mycoses (15.8%–26%), pruritus (11.5%), psoriasis 8.1%, bacterial (7.3%) and viral (6.7%) infections (13.14%). In Singapore the most common diagnosis was endogenous eczema (8.4%), xerosis (5.9%) and dermatitis e contactu (6.7%). Seborrhoic keratosis was the most common skin tumor 4.5% of all patients. Skin infestation with scabies was very common infection in 2.3%¹⁵.

Keratosis seborrhoica is the most common skin tumor in elderly population¹⁰. Incidence of seborrhoic keratosis were in various studies were from 24.2% to 74.5% and this was similar with our results^{1,16–18}. Statistically significant higher frequency of keratosis actinica and verrucae seborrhoica in elderly can be explained by carcinogenesis caused with cumulative effect of sun exposure and decreasing of immune status of aging population.

The racial and cultural differences and overall standard of living may explain a lower prevalence of skin tumors in non-European populations, but also lower frequency of infectious disease in our study⁶.

The higher incidence of allergic skin disease in younger population can be explained by more contact with allergen in this more younger and working group. The incidence of fungal dermatosis was from 20% to even 80%^{1,17,18}. In our study frequency was much lower 6.81% because of higher living standard and better health care then in Asian countries.

Higher frequency of fungal skin diseases in elderly is mainly caused by mechanical trauma of tight shoes, improper of skin care, orthopedic comorbidity, decrease of immune system and very common complications of diabetes in elderly^{19,20}. Decreasing immune status can explain higher incidence of infections in elderly.

Pruritus is the commonest dermatosis in elderly followed with keratosis seborrhoica^{7,21,22}. There was 3 fold increase of incidence of pruritus in 65 years or older

patients⁶. In our study there was no pruritus among ten most frequent diagnosis because most of that cases were defined nummular dermatitis or allergic contact dermatitis. In the study of Beaugard incidence of pruritus was 29%, in India Patanga found incidence of 78.5%, but in same country Grover found incidence of pruritus of 18.5%^{16,18,23,24}. Incidence of pruritus may vary depending specific population and definitive diagnosis.

Female had more keratosis actinica and fibromas because of longer life span but also women are more sensitive on their looks so the often want some cosmetic procedures.

Males had more nummular dermatitis and verucae vulgaris. We can explain it with more exposure to allergens, manual work with metals and agriculture work. Health education of elderly population regarding avoidance of topical medicaments and irregular self-medication with antiseptics and mostly corticosteroids and advocating use of sunscreens would help to reduce serious skin problem from pruritus, xerosis and contact dermatitis²⁵. Many infections could be contributed to low level of hygiene, neglect and low standard of care in community facilities for old population.

The difference between various studies underscore regional, national and skin type differences between different study population^{26–30}. Excessive bathing and harsh soap can cause pruritus and xerosis, multi-medication results in great number of iatrogenic effects³¹. With the aging of the population it is important that the primary care and specialist dermatology care close cooperate to handle the emerging skin problems in elderly³².

The limitation of our study is that we analyzed electronic database of a secondary referral Medical center, and not the general population. Also, there is a thin line between physiological and pathological conditions in aged population.

Conclusion

There are specific patterns of frequency of dermatoses in elderly. Verrucae seborrhoica, keratosis actinica and mycoses are more common then in general population. In elderly, risk for development of skin cancer is increased.

It is important to educate geriatric age patients in use of protective measures as regular application of emollients, foot care and protection from excessive sun irradiation. Early detection of skin cancers and treatment of precanceroses is of utmost interest of health providers.

High incidence of important dermatologic and specific pattern diseases in the elderly signals that all health system need to give much more attention with the diagnosis, prevention care and therapy of skin problems in old population.

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BOLESTI KOŽE KOD GERIJATRIJSKIH BOLESNIKA U DERMATOLOŠKOJ POLIKLINICI KARLOVAC

SAŽETAK

Cilj istraživanja je bio utvrditi karakterističan uzorak i učestalost dermatoza u bolesnika starijih od 65 godina. Pretraživanjem elektronske baze podataka Opće bolnice Karlovac s obzirom na dob spol i deset najčešćih dijagnoze u bolesnika starijih od 65 godina i uspoređivanjem s istim parametrima kod bolesnika u dobi 18–64 godine dobili smo slijedeće rezultate. Ukupan broj bolesnika je bio 3200. Bilo je 822 (25,69%) bolesnika starijih od 65 godina i 2378 (74,31%) mlađih od 65 godina. Omjer muškarci/žene u populaciji starijoj od 65 godina je bio 0,76:1. Muškarci su imali višu učestalost verrucae vulgaris kod 26 (7,3%) bolesnika, te kod numularnog dermatitisa u 47 (13,2%) bolesnika i ta razlika je bila statistički značajna. Žene su imale češće aktiničke keratoze u 124 (26,61%) i fibrome kod 23 (4,94%) bolesnika. Ta razlika je bila statistički značajna. Kod ostalih bolesti nije bilo statistički značajne razlike. Najčešće dijagnoze kod populacije starije od 65 godina su bile: keratosis actinica 184 (22,38%) bolesnika, verrucae seborrhoeae 156 (18,98%), dermatitis nummularis u 77 (9,37%), dermatitis allergica e contactu 60 (7,30%), mycosis kod 56 (6,81%) bolesnika, psoriasis u 51 (6,20%), verrucae vulgaris 39 (4,74), fibromi 27 (3,28), nevusi 9 (1,09%) i akne kod jednog (0,12%) bolesnika. Učestalost keratoza, seboroičnih veruka i mikoza je bila statistički značajno veća u populaciji starije od 65 godina. Postoji specifičan uzorak dermatoza u gerijatrijske populacije s većom učestalosti seboroičnih veruka, aktiničkih keratoza i mikoza. Postoji i veći rizik za razvoj karcinoma kože. Rana detekcija i tretman karcinoma kože i prekanceroza mora biti veoma visoko na listi prioriteta zdravstvene službe.