



SENSITIVE SKIN SYNDROME AND ENDOCRINE DISRUPTORS - IS THERE A CONNECTION?

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Abstract:

Background: *Sensitive Skin Syndrome (SSS) is predominantly a self-defined condition without an objective pathological finding. The syndrome presents with sudden and easily provoked flushes accompanied by unpleasant sensations like itching, pain, numbness in response to stimuli that usually do not cause such sensations.*

Endocrine disruption (ED) is an exogenous substance or mixture that induce negative health problems through affecting function(s) of the endocrine system in an intact organism.

The Aim of The Study: *was to establish the role of ED as a causative agent in SSS.*

Objective and Methods: *The presented study includes 304 female self-diagnosed with SSS. Demographic data were collected from registers of Medico-Aesthetic Center "Medea" Varna from April 2017 till April 2019. The model of the study investigates the causes of SSS.*

Results: *Results show the overall frequency of SSS was 31, 97%. As 174 (57, 23%) diagnosed in aesthetic visitors and 130 (42, 77%) in those with some health problem. The distribution according to the trigger factor show the prevalence of cosmetic products -56, 90%, detergents - 21.05% and cosmetic procedures- 40, 88%.*

Conclusion: *SSS is a serious health problem. The data from our study show that trigger factors, which are closely connected with EDC have a significant impact on this syndrome. In addition, adding topical treatment worsen rather than improve SSS. The literature sources reveal that this is first study of the role of ED as a causative agent in SSS in our country.*

Keywords: Sensitive Skin Syndrome; Trigger Factors; Endocrine Disruptors.

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1. Introduction

The official definition of sensitive skin is accepted by the International Forum for the Study of Itch (IFSI). This syndrome is determined by the appearance of unpleasant sensations (stinging, burning, pain, pruritus, and tingling sensations) in response to stimuli that usually do not cause such sensations [1].

In 1987 Maibach used the term Cosmetic Intolerance Syndrome, describing the condition of increased skin sensitivity without any visible changes [2]. The term "status cosmeticus" is later adopted [3]. Literary and clinical observations show an increase in patients complaining of

sensitive skin [4, 5]. Predominantly this is a self-diagnosis based entirely on the patient's history [6]. The condition is provoked not only by cosmetic products but also by a number of environmental factors [7].

For the purpose of the study, the ED-definition of the European Parliament is accepted as a theoretical frame: "An endocrine disruptor is an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub)populations" [8].

It also should be underline that skin by itself act as an endocrine organ. The skin have the ability to produce several hormones and substances with hormone-like activity, as well as metabolize some hormones [9].

2. Material and Methods

To assess the tendencies in distribution of SSS were analyzed data collected from registers of Medico-Aesthetical Centre "Medea" Varna from April 2017 till April 2019. Data include reports of 972 female visitors at a mean age 43.17 ± 14.45 years (range 22-68 years) with different skin or aesthetic problems. Diagnosis SSS was self-assessed in 304 cases (31, 97%); 174 (57, 23%) aesthetic visitors and 130 (42, 77%) with health problem.

We analyzed age distribution, seasonal distribution, location, and frequency according to the skin prototype. Patients complete a Ten-Item questionnaire for assessing sensitive skin [10] and additional questionnaire about trigger factors.

Patients gave written informed consent for data collection and analysis.

The statistical analysis was performed with SPSS v.21.0 for Windows. Hypotheses were tested using χ^2 -criteria (for the descriptive profile data). Results with $p < 0.001$ were interpreted as statistically significant.

3. Results and Discussion

Results show that the overall frequency of SSS was 31, 97%. As 174 (57, 23%) diagnosed in aesthetic visitors and 130 (42, 77%) in those with some health problem. Distribution according the age show the prevalence of SSS in middle age 41-45 (19, 09%), 31-35 (18, 77%) and lower level in older female 61 and up -4, 59% with no difference with or without additional health problem.

In our study 267(87.83%) of the patients pointed out some or few external or internal reasons as a start of SSS and 37 (12, 17%) connect SSS with almost everything. In most of the cases they find the connection between the beginning or worsening of SSS with physical factors(high or low temperature, cold wind, extremely dry weather)-17.10%, intake of drugs -18.42%, food -24.01%,health problem-9.86%, detergents -21.05%, cosmetic products-56,90%,etc. The exact distribution according to the trigger factor is shown on Table1.

Table 1: Distribution according to the trigger factor

Trigger factors	*	
Allergies	185	60.85%
Harsh ingredients or products	64	21,05%
Cosmetic procedures like over-exfoliation, chemical peelings and etc.	139	40,88%
Cosmetic products for topical use	173	56,90%
Stress	88	28,94%
Hormone changes as puberty, month cycle, menopause	106	34,86%
Much coffee. Alcohol. Beverages. Smoking	36	11,84%
Skin condition as eczema.	57	18.75%
Health problem from common cold to cancer	30	9.86%
UV damage	89	29.27%
Environmental stressors- pollution, climate	52	17,10%
Luck of sleep	15	4.93%
Certain medication including contraception	56	18,42%
Diet	73	24,01%

*The summery is more than 304 for there were accepted more than one answer

It should be noted that 176 (57, 89%) pointed out at least 3 trigger factors, 37 (12, 17%) insisted that almost everything triggered SSS, 41(13.48%) mentioned between 3 to 5 triggers, 50(16.46%) cited more than 5, but not all of the listed. In the group of SSS patients who mentioned from 1 to 3 triggers dominated the role of allergies-50, 27%; cosmetic procedures- 45.23% and cosmetic products-55, 45%. The variations in the next 2 groups, with triggers between 3 to 5 and 5 to 8, the distribution of causative agents is more or less equal. Highest result is for medications 17, 85%, and stress 11.32%. Stress is pointed out as the main reason in the 4th group. For patients who are affected by almost all factors stress is mentioned at 39, 77%, followed by environments- 34, 61%. (Figure1)

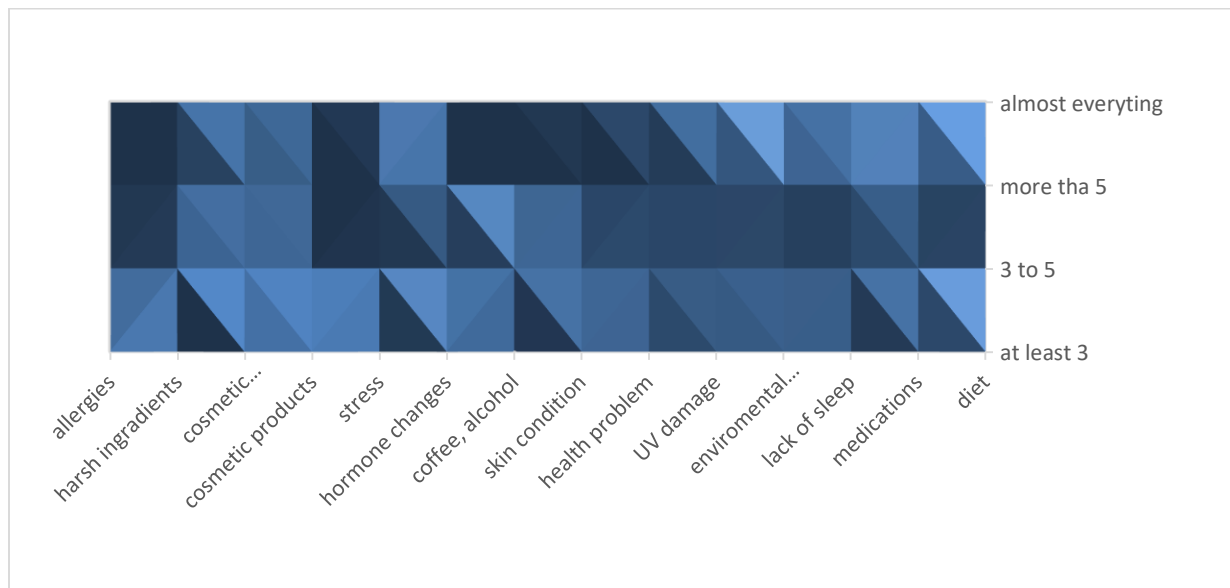


Figure 1: Distribution of causative agents according the number of pointed factors

By the definition trigger is something that either sets off a disease in people who are genetically predisposed to developing the disease, or that causes a certain symptom to occur in a person who has a disease. Ida Duarte and co-authors (2017) pointed out the role of environmental factors, cosmetic products and coexisting with other dermatoses for distribution of SSS [11]. Misery and coauthors (2007) established that persons with SSS were more numerous in summer than in winter [12]. Considering that seasonal changes are closely connected with environmental factors, including exposure to UV radiation, the use of sunscreen, etc. we can assume them as trigger factors for SSS. Misery (2005) performed an epidemiological study in France and show data that SSS is triggered by emotion, cold, heat or cosmetics [13]. Other researches also published data proving that SSS is closely correlated with numerous trigger factors and pointed out the leading role of cosmetic intolerance [14, 15]. In spite of the growing interest to SSS, there are still few and unsystematic publications, and these relating to the trigger factors are more or less insufficient which make a comprehensive discussion.

Sotirios Maipas (2015) published a review aiming to clear the benefits and negatives of cosmetically product- sun lotions. The author pointed out that in vitro and in vivo studies have demonstrated their ability to show hormonal activity [16]. Caliman F. and Gavrilescu M. (2009) indicated that synthetic organic chemicals for hygienic as well as some medications such as contraceptives, antibiotics, β -blockers, and analgesics are ED agents [17]. The reports from other authors show EDC in pharmaceutical and personal care products [18, 19]. A number of substances that are included in hygiene products, cosmetics, perfumes and medicaments are listed as EDC [20, 21]. Ripamonti and co-authors (2018) mentioned ethynilestradiol (used in contraceptive pills), parabens, formaldehyde, glutaraldehyde, aromatic amine derivatives, metal salts, UV filters, phthalates, solvents, fragrance ingredients and more [22]. It is true that there is still lack of information about the direct connection between EDC and skin conditions. But on the other hand all of the quoted above chemicals are ingredients used in cosmetics, over the corner medicaments [23], UV filters [24], skin whitening agents [25] and etc.

In our study majority of SSS patients pointed out cosmetic products -56, 90%, detergents -21.05% and cosmetic procedures- 40, 88% as the main triggers.

With this study we want to initiate the further discussions about could EDC be an optional explanation of mechanism of SSS.

4. Recommendations

In spite of the growing interest to SSS, there are still few and unsystematic publications, and these relating to the trigger factors are more or less insufficient which make a comprehensive discussion open for further investigations.

5. Conclusion

This is the first study of SSS and ED in our country. Sensitive skin alongside with ED are a relatively new problem of modern society. Patients suffer from significant limitations and discomfort. The cause and exact mechanism are still unclear which makes treatment extremely difficult.

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