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Research Article

A STUDY ON ACNE ROSACEA ITS ASSOCIATION WITH DEMODICOSIS

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Abstract:

Objectives: There is frequent encounter with the demodex spp. of humans in all over the world. There is controversial role of these parasites is in causation of different diseases of skin. This research work was performed to find out the rate of incidence and relationship of demodicosis/demodex spp. with the acne rosacea.

Methodology: The duration of this research work was from May 2016 to June 2020. This study was carried out in Mayo Hospital Lahore. Total 80 patients comprising 49 females and 31 males suffering from acne rosacea and randomly recruited 40 healthy controls, underwent for demodex spp. 25 patients were present with less than 30 years of age and 55 patients were present with more than 30 years of age. We plucked out the samples from surfaces of forehead and nose of the patients present with acne rosacea and healthy controls by SSSB (Standardized Surface Skin Biopsy) method in laboratory. We examined the preparations prepared in the Hoyer solution under light microscope with objectives of 4X & 10X.

Results: Identified parasites were much high in the group of patients present with acne rosacea (65.630%) As compared to the subjects of control group (4.0%), in female patients (74.250%) than male patients (53.608%) and among patients with 30 years of age or more (74.670%) than the patients below 30 years of age (46.148%). We detected the significant association acne rosacea and sex, demodicosis and age.

Conclusion: The findings of this research work concluded that there is strong association between acne rosacea and demodicosis. So, it is important for the dermatologists to consider the demodex spp. in the acne rosacea's etiology.

KEY WORDS: Etiology, Demodex Spp., Dermatologists, Prevalence, Association, Acne Rosacea.

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INTRODUCTION:

Henle on 1841 detected the Demodex folliculorum, and it was described by Simon in the same years. Akbulatova separated the Demodex brevis in 1963 which are very common permanent ecto-parasites of humans [1, 2]. Rosacea is very controversial topic in the field of dermatology, largely due to its uncertain patho-physiology and clinically variation. It has long been investigated whether oral & topical anti-microbial agents for this rosacea employ their influences by anti-microbial or anti-inflammatory mechanisms [3, 4]. Demodex spp. (*D. folliculorum* & *D. brevis*) of man are encountered commonly as cosmopolitan in whole world. *D. folliculorum* is normally present in follicular infundibulum and *D. brevis* is normally found in sebaceous & Meibomian glands. Demodex spp. is often placed on nose, face, cheeks, forehead, temples, chin, eyelash, rarely neck, ear, head haired skin, nasolabial site, genital region and nipple. The best region to search the mite is the compete face. There is association of the incidence of demodicosis in skin with the age of the person and rate of occurrence of infestation rises with the increase in age. These parasites are not available among pediatrics.

The infestation is very high in middle and older age. The pathological role played by the demodex spp. in human beings is matter of controversial debate. Research works conducted in past on this particular subject stated that demodex spp. is not the cause of any disease and some other research work concluded that these parasites are the main causative agents behind acne rosacea, blepharitis, acne vulgaris and seborrheic dermatitis, by contamination of the microorganisms, enhanced amount of the parasites in follicles and causing the stopple and dilatation. In addition, they also stated that these parasites are the reason behind

allergic reactions by entrance of these parasites' antigens into the tissues of skin [5]. This research work was carried out to examine the relationship between acne rosacea and demodicosis.

METHODOLOGY:

The duration of this research work was from May 2016 to June 2020 in the Mayo Hospital Lahore. 80 patients with 49 females and 31 males suffering from acne rosacea and 40 healthy persons without any dermatological abnormalities investigated demodex spp. 25 patients were below than 30 years of age and 55 patients were of 30 years of age or above. We plucked the samples from nose surface and forehead of these patients present with acne rosacea and healthy persons by SSSB (Standardized Surface Skin Biopsy) procedure in the parasitology laboratory. We dripped a drop of cyanoacrylate on sticky surface of a region of cellophane-tape, and then touched this region on skin surface for about sixty seconds and then separated it rather gently. This particular surface region of cellophane-tape was touched with the use of Hoyer's solution, dripping of a drop was carried out on object slide and it underwent examination with the help of light microscope with 4X & 10X objectives.

RESULTS:

We encountered with demodex spp. 65.63% (n: 50) out of 80 patients present with acne rosacea and 3 (4.0%) out of 40 healthy persons. We found a statistical significance association between demodicosis and acne rosacea ($P < 0.0010$) in the group of patients as compared to the group of healthy controls. We detected these parasites in 74.25% female patients and 53.79% male patients suffering from acne rosacea and this association as much statistically significant ($P < 0.050$) between gender and incidence of parasite (Table-1).

Table-I: The Frequency of Demodex Spp. According to The Sex of The Subjects with Rosacea

Sex	Positive		Negative		Total	
	No	Percent	No	Percent	No	Percent
Female	30	74.25	13	21.71	49	55.82
Male	20	53.79	17	42.17	31	40.14
Total	50	65.63	30	30.33	80	100

$$X^2 = 4.556, p < 0.05$$

We encountered the parasites in 74.67% patients present with 30 years of age or more than 30 years and 46.13% in the patients present with less than 30 years of age. This association was also significant statistically ($P < 0.050$) between patient's age and incidence of demodicosis (Table-2). We also observed that the application of SSSB procedure was much easy for the identification of demodicosis and patients appreciated this procedure positively.

Table-II: The Frequency of Demodex Spp. According to The Ages of The Subjects with Rosacea.

Age Groups	Positive cases		Negative cases		Total	
	No	Percent	No	Percent	No	Percent
<35 years	11	46.13	12	49.83	25	24.45
>35 years	39	74.67	18	23.31	55	71.51
Total	50	65.63	30	30.35	80	100

$$X^2 = 6.379, p < 0.05$$

DISCUSSION:

There is frequent encountering of human beings with demodex spp. in whole world. Role played by these parasites in the etiology of the disease. Some research work has showed that these mites form the normal skin flora without being a causative agent of any diseases [6] but some other research studies have stated that these parasites are the causative agents behind many diseases of skin [7, 8]. Many studies investigated the association between the various skin diseases and *D. folliculorum*, but the results of these research works were controversial. It was stated that *D. folliculorum* has been discovered in 89.19% patients suffering from papulopustular rosacea [9], 86.89% patients present with rosacea [10], 60.18% patients having perioral dermatitis [11] and 77.51% sebum specimens obtained from the nasolabial region of the patients [12]. There was detection of demodex spp. in 59.48% patients [13], 57.0% [14], 57.58% [15] patients present with rosacea, 9.78% [5], 13.38% [16] patients suffering from acne vulgaris, 26.78% [17] and 54.89% [5] patients having blepharitis according to different research works conducted. The rate detected in this research work was much high as compared to the other research works conducted [13-15]. There is no presence of demodex spp. among children and meagre among young & adolescents. But there is an increase in incidence with the increase of the age [18].

There was incidence of *D. folliculorum* in four percent young subjects, 28.0% in the patients from 20 to 60 years of age and 45.0% in the patients with higher age [18]. One other research work also stated that there was no association between the age of the patients and demodex spp [6]. One other research found that the rate of incidence was high among subjects with more than twenty years of age as compared to the patients having less than twenty years of age [13].

Researchers have detected different results while comparing the sex with demodex spp. Although there was no relation of the prevalence of these parasites with the sex of the patients according to various research works [13, 19]. But one other research work

stated that the infestation of this complication is very high in male patients as compared to the female patients with demodex spp [20]. But in this current research work, these parasites were more encountered in female patients as compared to the male patients suffering from acne rosacea and this particular association was much significant statistically between sex and demodex spp. *D. folliculorum* is often found on forehead, nose, chin, face, cheeks, temple, ear, eyelash, nasolabial site, breast, rarely neck, genital region and nipple but the best site is face. Therefore, the collections of the samples were carried out from nose and forehead in this current research work to encounter these parasites, and it was confirmed that there is easy detections of the parasites from the samples collected from these regions. It is also stated that demodex spp. can be obtained from tissues of skin by SSSB method, skin scratching, punch biopsy and cellophane-tape.

CONCLUSION:

The findings of this research work concluded that there is a strong association between the acne rosacea and demodicosis. So, it is important for the dermatologists to consider the demodex spp. in acne rosacea's etiology.

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