

## Prevalence of demodicosis among youth in Northern Iran

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### Summary

*Demodex* spp. is common ectoparasites of human and animals. At present, although there is no agreement on demodicosis pathogenicity, some researchers have been trying to establish the role of *Demodex* in human and animal diseases. Human demodicosis usually remains asymptomatic, but occasionally it may cause blepharitis and skin diseases such as rosacea. Demodicosis usually begins in adults and rises to peak levels during old age. The peak of secretion of sebaceous glands is in the 20-30 years age group. The purpose of this study was to examine the prevalence of demodicosis among youth group (20-30 years old) in North of Iran in 2012. The sample size was 65 (46 females and 19 males). Sebum was expressed from the nasolabial folds, and examined under phase contrasted microscopy. Statistical analysis was performed using the SPSS 14. The overall prevalence of demodicosis in this study was 20%, of which 13.8% was females (9) and 6.1% belonged to males (4). There was no statistically significant correlation between the prevalence of demodicosis in males and females among examined people ( $P > 0.05$ ). Since, the demodicosis prevalence among healthy individuals without any complaint was found to be 20%, we believe that, *Demodex* spp. infestation should be considered as a serious health problem.

**Key words:** Demodicosis, prevalence, Iran.

### Introduction

Demodicosis is a worldwide infestation caused by *Demodex* spp. mite. These microscopic mites are common ectoparasites of animals and human. *Demodex* spp. life cycles are approximately 2-3 weeks for an egg to the larval stage. The adults are semi-transparent, worm-like, eight-legged and their bodies consist of a cephalothorax and an abdomen (Man, 2002; Rusiecka-ZiA, kowska et al., 2013).

Among different reported species, *D. folliculorum* and *D. brevis* have been identified in the skin of humans. *D. folliculorum* commonly inhabits in hair

follicles, whereas *D. brevis* lives in the meibomian and sebaceous glands. Other species, such as *D. cati* (cats), *D. canis* (dogs), *D. bovis* (cattles) and *D. caprae* (goats) are pathogen for animals and are not found in the human being (Lacey et al., 2009; Man, 2002; Rufli and Mumcuoglu, 1981; Walker, 1994).

At present, although there is no agreement on demodicosis pathogenicity, some researchers have been trying to establish the role of *Demodex* in human and animal diseases. Pityriasis folliculorum, rosacea-like demodicosis, pustular folliculitis, perioral dermatitis,

hyperpigmented patches of the face and blepharitis are main clinical manifestations in human demodicosis (Ayres Jr, 1963; Ayres, 1930; Liu et al., 2010; Man, 2002; Purcell et al., 1986). It has been reported that demodicosis are more frequently observed among immune-compromised and immunosuppressed patients (Magro and Crowson, 2000; Ozer et al., 2012; Smith, 1973). The studies demonstrated a positive correlation between demodicosis prevalence and aging but do not show any sex or race predilection (Ozer et al., 2012).

Health personnel do not maintain records of the prevalence of *Demodex* spp. and little is known about the prevalence of *Demodex* spp. because it is not considered to be a serious health problem. Considering the human-to-human transfer of demodicosis and close contact importance, this study aimed to determine the prevalence and distribution of demodicosis among youth group in Babol, Mazandaran province, North of Iran.

### Materials and Methods

A total number of 65 individuals (46 females and 19 males) with the age range of 20-30 years old were examined for demodicosis in Babol, Mazandaran province, North of Iran, in the year of 2012.

Sampling was carried out by pressing the laterals (right and left) of individuals' nose for collection of secretions. Thereafter two smears were prepared on slides. The slides were cleared using a drop of lacto phenol and examined under light microscopic with magnification of 4, 10 and 40X. Mites were identified using available identification key (Walker 1994).

Statistical analysis was performed using the SPSS 14. Chi-Square test was used to determine the significant association for the prevalence of demodicosis to host age and

sex. A P-value of less than 0.05% was considered as significant.

### Results

Among 65 examined individuals, 20% (13) were positive for demodicosis that, 13.8% (9) and 6.1% (4) of them were females and males, respectively. There was no statistically significant correlation between the prevalence of demodicosis and sex among examined people ( $P>0.05$ ). Figure 1 shows the isolated *Demodex* spp. from examined patient. Table 1 depicts the prevalence of demodicosis between different sexes in Babol, Mazandaran Province, North of Iran.



**Fig 1:** Isolated *Demodex* spp. from surrounding nose sebaceous glands under light microscope (40x).

**Table 1.** Distribution of *Demodex* spp. by sex in examined groups

Sex	Positive (%)	Negative (%)	Total (%)
Male	4 (21.1)	15 (78.9)	19 (100)
Female	9 (19.6)	37 (80.4)	46 (100)
<b>Total</b>	<b>13 (20)</b>	<b>52 (80)</b>	<b>65 (100)</b>

## Discussion

The findings of this study showed that the prevalence of demodicosis among the young age group of Babol is high. The overall infestation of youth people with *Demodex* spp. was (20%) which is more than a similar study (4.5%) undertaken in North of Iran (Youssefi et al., 2012).

No significant difference was found among examined sexes in this study. Another study showed similar results with this study with regard to sex differences (Youssefi et al., 2012). However, according to their investigation Youssefi et al (2012) revealed that, males show more infestation rate with *Demodex* spp. compared to females due to having more sebaceous glands, providing more food for *Demodex* mite (Elston, 2010). Besides, Aylesworth and Vance (1982) mentioned that infestation and parasite density of males were higher than females (23% vs 9%) (Aylesworth and Vance, 1982; Sengbusch and Hauswirth, 1986).

*Demodex* spp. is obligate ectoparasites of human and animals that transmitted from host to host via physical contact. In Iranian culture, people greet with each other by kissing and handshaking. Therefore, considering the intimate and close contact with people, the prevalence of demodicosis could be affected by cultural factors in different societies. Lack of personal hygiene is another factor predisposing individuals to demodicosis (Man, 2002; Rusiecka-ZiA, kowska et al., 2013).

In addition, *Demodex* spp. infestation usually begins at adult ages and rise to peak levels during old age as the prevalence of *Demodex* mite is about 15% in patients aged 3-15 years, about 70% in those aged 20-50, and approaches 95% by age 71. Moreover, the parasite number increases in the lesion with advancing age (Forton, 1986; Czepita et al., 2004). The peak of secretion of sebaceous glands is in 20-30 years age

group (Zomorodian et al., 2004). Hence, people between 20 and 30 years old were selected to participate in this screening study.

Human demodicosis usually remains asymptomatic in the vast majority of cases, however, in some conditions such as suppressed immune system (caused by stress and corticosteroids) it may cause blepharitis and skin diseases such as rosacea (Ayres Jr, 1963; Liu et al., 2010; Purcell et al., 1986; Ruffli and Mumcuoglu, 1981; Chen and Plewig, 2014). These patients may have itching, inflammation and other disorders. Treatment of demodicosis is based on the control of mite proliferation. A guide to treating and managing demodicosis is: washing the affected area with baby shampoo, rubbing alcohol, improve hygienic measures, remove dead skin cells and employ the insecticides in heavy infestation. In addition, mercury oxide ointment and systemic ivermectin are frequently used for skin and ocular disease, respectively (Hui-ming, 2007; Mueller, 2004).

In conclusion, since the demodicosis is considered a common health problem and can even be zoonotic disease; role of pet animals in prevalence and transmission of *Demodex* spp. should be emphasized. Therefore, there is a need to consider strict hygiene practices after animal handling.

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