Role of friendly kissing in Molluscum contagiosum infection of the face

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Abstract
“Molluscum Contagiosum” is a common skin disease caused by “molluscum contagiosum virus”. It is primarily transmitted by direct contact of viral particles of infected skin and the human is the natural host. In adults, most of the cases are transmitted by sexual contacts. The friendly kissing habit could be responsible of transmission of “molluscum contagiosum” infections. A clinical descriptive study was conducted in the Department of Dermatology and Venereology, Ramadi Teaching Hospital and Private Dermatological and Maxillofacial Clinics, Ramadi City, Anbar Governorate, Iraq. From August 2019 to April 2020. Patients more than fifteen years old, with “molluscum contagiosum” of the face were enrolled in this study. A thorough history was taken regarding age, genders, marital status, residence and drugs intake. The questionnaire contains history of kissing habits as greeting behavior besides the other roles that suspected in spreading of infection. A total of 45 patients were recruited. Their mean (± SD) age was 37±17.8 years (range 15–59 years); 39 (86.7%) were males, and 6 (13.3%) were females. The right cheek kisser was the most common habit in 36 (80%) patients, while 9 (20%) patients had the both sides kisser. Other routes of infection also reported but with small percentage. This report showed that “molluscum contagiosum” infection with high frequency which involved the right side of the face was in 33 (73.3%) patients, and which had low frequency was in 6 (13.3%) patients for each left or both sides of the face. “Molluscum contagiosum” of the right side of the face was statistically significant associated with the right cheek kisser, p < 0.05. In conclusion, Friendly kissing as a greeting can play important role in the spread of “molluscum contagiosum” infection. Furthermore, social pressure to discontinue face kissing habit as a greeting or restrict kissing of right shoulder (covered with cloth).

Keywords: molluscum contagiosum”, skin infection, Friendly kissing, cheek kisser
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Introduction

"Molluscum Contagiosum" is a common skin disease caused by “molluscum contagiosum virus”, a large double strand DNA virus which belongs to the Pox viridae family. The humans are natural host[1, 2]Disease is primarily transmitted by direct contact of viral particles of infected skin, autoinoculation, shared bath towels, contaminated fomites, sponges or gymnasium equipment. Also it has been associated with the use of the swimming pool[2, 3]. It is characterized clinically by small pink or skin colored umbilicated papules and nodules, the lesions may be single or multiple, usually widespread and distributed on the face, trunk and extremities excepting the palms and soles, intertriginous regions and genitals. In adults, most of the cases are transmitted by sexual contacts, and lesions are most frequently located in the genitals, perianal area, lower abdomen and thighs[4, 5, 6]. The differential diagnoses include: infectious (Verruca vulgaris, Chickenpox, Folliculitis); neoplastic (Syringomas, Steatocystoma multiplex and Basal cell carcinoma); Miscellaneous (Acne vulgaris, Milia, Sebaceous hyperplasia, and Papular urticarial)[2, 7].

Social pressures can induce population level laterality and there is a variation of laterality between populations. They show that social pressures for “cheek kissing” are involved in the determination of laterality. In France, the typical greeting is “cheeks kissing”, for saying goodbye and/or hello. This behavior occurs very frequently and it is part of the social life[8, 9]. Friendly kissing habit could be responsible of transmission of “molluscum contagiosum” infections. Avoiding this habit is a promising way to avert the infection.

Patients & Methods

Study design and subjects

A clinical descriptive study was conducted in the Department of Dermatology and Venereology, Ramadi Teaching Hospital and Private Dermatological and Maxillofacial Clinics, Ramadi City, Anbar Governorate, Iraq, from August 2019 to April 2020. Forty-five patients (older than fifteen years old) complaining of "molluscum contagiosum" of the face were enrolled in this study. A history was taken regarding age, genders, marital status, residence, drugs intake. The questionnaire contains history of kissing habits which either right cheek kisser which is usually done in our society with kissing of the right shoulder, or two side’s kisser as greeting behavior.
Definitions: “kissing individual” is the approaches of a person to the other to kiss. A “right cheek kiss” occurs when an individual kisses the right cheek of the receiver. A “left cheek kiss” is individual kisses of left cheek[8, 10]. Additionally, detailed history of suspected roles of spreading infection was taken like sharing clothes, bath towels, shaves, swimming pool and gymnasium equipment.

The diagnosis was achieved depending on the clinical bases. The eligible cases with “molluscum contagiosum” involving the face only were enrolled, either the right, left or both sides of the face. Also, the face was divided into main landmarks (cheek, frontal, temporal, perioral and periorbicular). The cases in which the disease affects other body sites were excluded. Also, the number of lesions and the duration of illness were reported. Laboratory studies were done and they include complete blood counts, random blood sugar, viral screen (HIV Ab- Ag test) and pregnancy test (for females).

Excluding criteria include: family history of “molluscum contagiosum”, atopic dermatitis, diabetes mellitus, immunocompromised patients, or those on immunosuppressive drugs, pregnancy, topical steroid and topical non-steroidal agents like tacrolimus. Inclusion criteria include: immune competent patients, more than fifteen years old, with "molluscum contagiosum" of the face only, the research did not involve other parts of the body, and those without family history of same disease.

Ethical considerations
This study was approved by the Ethics Approval Committee, Collage of Medicine, University of Anbar, and a written consent form was obtained from each patient prior to the enrollment into the study, and digital photographs were taken.

Statistical Analysis
The data were analyzed using the programs: Excel 2010 and SPSS version 22. The hypothesis was tested using Chi square tests, and the differences between percentages tests took the probability of ≤ 0.05 as the lowest limit of significance.

Results
A total of 45 patients were recruited. Their mean (± SD) age was 37±17.8 years (range 15–59 years); 39 (86.7%) were males, and 6 (13.3%) were females and the males to females ratio was 6.5:1. There were significant differences in the residency of patients, 33 (73.3%) patients lived in urban area, while 12 (26.7%) patients lived in rural areas. The mean (± SD) duration of the disease was 20±10.28 days (range 4-40 days), while the range of number of lesion was (1-34) with mean (± SD) about 11± 9.46. Complete blood counts,
random blood sugar were within normal, viral screen (HIV Ab- Ag test) and pregnancy test- for females were negative.

Regarding the suspected routes of disease transmission, the right cheek kisser was the most common habit in 36(80%) patients, while 9(20 %) patients mentioned the both sides kisser and they did not remember who kiss them and if he or they had molluscum contagiosum on their faces. Other routes of infection were in small percentage, 6(13.3%) patients shared bath towels, 6(13.3%) patients had swimming pool, 3(6.7%) patients share electric shaves, and no one had gymnasium equipment participation(Table1)

This report showed that’s "molluscum contagiosum” infection with high frequency involved the right side of the face in 33(73.3%) patients and it had low frequency in 6(13.3%) patients for each left or both sides of the face (Table2). "Molluscum contagiosum” of the right side of the face was statistically significant associated with the right cheek kisser, p < 0.05. (Table3)

Inoculation of viral particles was according to the face landmarks which appeared on the cheek in 25(55.6%) patients, cheek+perioral in 9(20%) patients, 3(6.7%) patients for each part (temporal, frontal+perioral, frontal+temporal), and 2(4.4%) patients had lesions at cheek+frontal.

<table>
<thead>
<tr>
<th>Table1</th>
<th>Frequency of suspected route of molluscum contagiosum transmission</th>
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<tr>
<td><strong>personal HX of kissing</strong></td>
<td>Frequency</td>
</tr>
<tr>
<td>Right side</td>
<td>36</td>
</tr>
<tr>
<td>both</td>
<td>9</td>
</tr>
<tr>
<td><strong>sharing bath towel</strong></td>
<td>Frequency</td>
</tr>
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<td>6</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
</tr>
<tr>
<td><strong>sharing shaves</strong></td>
<td>Frequency</td>
</tr>
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<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>42</td>
</tr>
<tr>
<td><strong>swimming pools</strong></td>
<td>Frequency</td>
</tr>
<tr>
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<td>6</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
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Table 2
The frequency of sites involvement by molluscum contagiosum of face

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Right</td>
<td>33</td>
<td>73.3</td>
</tr>
<tr>
<td>Left</td>
<td>6</td>
<td>13.3</td>
</tr>
<tr>
<td>Both</td>
<td>6</td>
<td>13.3</td>
</tr>
<tr>
<td>Total</td>
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Table 3
The personal history of kissing * site in face Cross tabulation

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<th>site in face</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>personal history of kissing</td>
<td>Right</td>
<td>30(83%)</td>
</tr>
<tr>
<td>both</td>
<td>3(33.3%)</td>
<td>3(33.3%)</td>
</tr>
</tbody>
</table>

Figure 1: Present of patients with molluscum contagiosum according face landmark
Discussions

To our knowledge, this is the first study which presents the epidemiology of “molluscum contagiosum” skin infections of the face among young and adults in Alanbar governorate. It has generally been assumed that “molluscum contagiosum” infection of adult patients is mainly acquired from an infected genital area and it considered as sexual transmitted infection [11]. “Molluscum contagiosum” is a common skin infection in children involves the face and/or trunk areas [6].

The present work data align with the first empiric evidence that “molluscum contagiosum” transmitted from man’s face to another man’s face, while the kissing may play a role. Right side friendly kisser with right shoulder (covered by cloth) kisser are common habit of greeting (80%), even after few hours of separation [3]. This is significantly associated with high frequency of “molluscum contagiosum” infection of the right side of the face (73.3%), p < 0.05. Besides that, the main area of infections of the face is cheek (55.6%) and cheek + perioral (20%), and these are the major sites in touch. This is one possibility that increases suspicions that kissing has a role in spreading of viral particles.

Another possibility is the increase of males (86.7%) ratio among patients than females (13.3%) ratio because the friendly kissers among men are more than women in our community. Also, men spend more time outside home, unlike other studies that were previously published, and it was found that no difference in incidence between males and females [12]. However, high male sex ratio was found in a study from Japan due to their habits associated with the spread of the infection such as swimming which causes outbreaks that occur among children who bathe or swim together [13]. Third possibility is the elevated virulence of the infected agent and by time it becomes more contagious. Pathogens evolve towards higher levels of virulence, this is a major challenge in the control of infectious disease [14, 15].

Last possibility, this research has been carried out in a city which has only one swimming pool with low frequency (13.3%) as a transmitter. The idea of sharing bath towels (13.3%) and electric shaves (6.7%) are refused among people in this society, this leads to low effects rate as a primarily transmitter of virus. While another previous study, highlighted on swimming pool, bath towels, contaminated fomites, sponges or gymnasium equipment as a major viral particles source [2, 3, 13]. The limitations of the study were the small sample; the diagnosis depend only on clinical examinations without the histopathological study and also a missed past history of immunosuppressive drugs intake.

Conclusions
People promotion of self-skin check, and they should be encouraged to report immediately any skin lesion. Friendly kissing as a greeting can play important role in the spread of “molluscum contagiosum” infection. Furthermore, social pressure to discontinue face kissing habitas greeting is needed or we restrict kissing to right shoulder (covered with cloth).

Acknowledgments
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Availability of data and materials
Not applicable

Ethics approval and consent to participate
This study was approved by the Ethics Approval Committee, Collage of Medicine, University of Anbar, and a consent form was obtained from each patient prior to the enrollment into the study, and digital photographs were taken. The consent process that include full disclosure of the nature of the research, adequate comprehension on the part of the potential participant, and the participant’s voluntary choice to participate.

Consent for publication
A written consent form was obtained from each patient prior to the publication of the study.

Competing interests
The authors declare that they have no competing interests.

References