MOLLUSCUM CONTAGIOSUM RISK FACTORS IN ADULTS. A CASE-CONTROL STUDY

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Introduction

Risk factors for the development of *Molluscum contagiosum* (MC) in children have been widely studied. Swimming confers a double risk for the acquisition of MC and enhances the risk of more severe disease. Atopic dermatitis (AD) has also been a traditional risk factor among children. Epidemiological studies show higher prevalence of AD between children with MC. However, other studies failed to detect such a relationship.

In adults, risks factors have not been widely studied. It has been traditionally considered a "minor" sexual transmitted infection (STI). However, other risk factors have been reported. Villa et al related the presence of MC in adults to women taking oral contraceptives, non-tobacco users and HIV infection. Desruelles et al recently suggested a relationship between pubic hair removal and MC. Sharing bath sponges or towels with an individual infected by MC is also considered a risk factor. Condom use does not offer any protection for MC acquisition. In some patients the use of immunosuppressive drugs either topical corticosteroids or calcineurin inhibitors have been implicated as contributing factors. Tattoo instruments, beauty parlors, Turkish baths and the participation in contact sports have been also related to the disease.

Objective

The objective of the present is to describe the risk factors related to the acquisition of MC in adults.

Patients and methods

A case-control study was performed during a 12-month period from January 1st to December 31st 2013 among patients who attended our Department of Dermatology.

All consecutive adults (> 18 years old) who asked for medical advice for having MC were eligible for the study.

A control group was recruited randomly amongst the healthy accompanying people on the dermatological consulting area. Control subjects were individually paired with MC subjects according to sex and age.

An extensive questionnaire was administered to the participants. Questions regarding sexual health were responded confidentially by subjects or controls. Variables included in the study were sex, age, lifetime history of tobacco use, prior STIs, prior genital diseases, prior STI in the partner, prior MC in the partner or in nearly children, presence or prior atopic dermatitis, use of immunosuppressive drugs (either topical or systemic), number of total sexual partners, number of sexual partners one year before, condom use, use of pools and habit of pubic hair removal.

The approval for the study was provided by the *Comitè Ètic d'Investigació Clínica from l'Institut Mar d'Investigació Mèdica (CEIC-PSMAR).*

Results

One hundred and two consecutive patients with the diagnosis of MC and one hundred and nine controls, who agreed to participate and completed the questionnaire were included in the study. Approximately 70% of eligible control patients agreed to participate. There were no differences in age and sex between cases and controls.
The results are summarized in Table 1.

Univariate analysis revealed that the presence of MC in adults was significantly associated with the antecedent of a previous STI (p:0.04) or an illness of the genital area (p:0.03), the presence of MC in the partner (p:0.05) and the pool usage (p<0.01).

No differences could be related to MSM sexual intercourses, the condom use, the presence of atopic dermatitis, the intimate contact with children, the habit of pubic hair removal or a past history of ITS in the partner. No relation could be detected between either the total number of sexual partners or the last year sexual contacts.
Eleven patients and seven controls referred the use of topical immunosuppressive drugs, and no differences were detected between MC patients and controls. However, it is interesting to note, that facial lesions were present among the 15 patients who used immunosuppresive drugs and in 33% of HIV infected patients.

Table 1- Comparison table between the variables included in the study among patients with MC and healthy controls.

		CASES n (%)	CONTROLS n (%)	p VALUE
Sex	Men Women	52 (51) 50 (49)	49 (44,9) 60 (55,1)	0.58
Localization	Genital area Trunk Head and neck Lower extremities More than one localization Non data	59 (57,8) 12 (11,7) 17 (16,6) 15 (14,7) 6 (5,8) 2 (1,9)		
Serological screening tests for HIV and *Treponema pallidum*	Studied Negative Previous known HIV New HIV Not studied	45 41 4 0 57		
Previous STI	Yes No Non data	18 (17,8) 83 (82,2) 1	9 (8,3) 100 (91,7) 0	0,04
Previous illness on the genital area	Yes No Non data	4 (4,9) 96 (96,0) 2	18 (16,5) 91 (83,5) 0	0,03
Sexual practices	Homosexual Heterosexual Non data	15 (14,7) 87 (85,3) 0	8 (7,4) 100 (92,6) 1	0,12
Immunesuppressive drugs (either topical or systemic)	Yes No Non data	11 (11,5) 85 (88,5) 6	7 (6,4) 102 (93,6) 0	0,54
Pool usage	Yes No Non data	41 (40,6) 60 (59,4) 1	16 (14,7) 93 (85,3) 0	<0,01
Condom use	Yes No Non data	57 (56,4) 45 (44,6) 2	58 (69,1) 36 (38,3) 15	0,54
Children frequent contact	Yes No Non data	35 (34,3) 67 (65,7) 0	48 (44,4) 60 (55,6) 1	0,16
History of atopic dermatitis	Yes No Non data	3 (8,3) 33 (91,7) 66	10 (9,3) 97 (90,7) 2	0,9
Hair removal on the last 3 months	Yes No Non data	41 (53,2) 36 (46,8) 29	56 (54,9) 46 (45,1) 7	0,49
Partner with MC	Yes No Non data	11 (10,9) 90 (89,1) 1	3 (3,2) 90 (96,8) 16	0,05
Partner with ITS	Yes No Non data	3 (3,0) 97 (97,0) 2	1 (1,1) 91 (98,1) 17	0,62

	CASES mean (SD)	CONTROLS mean (SD)	p VALUE
Age	32 (11.4)	33 (10.2)	0.55
Number of lesions	10 (10.5)		
Number of sexual partners	8.2 (17.6)	6.2 (5.9)	0.2
Number of last year sexual partners	2,3 (5.6)	1.4 (2.1)	0.15

Discussion

Our study focused on reviewing the epidemiological risk factors related to the acquisition of MC in adults. Referring to sexual habits, we did not find differences between the number of total sexual partners or last year sexual partners, or the presence of a STI in the partner. In contrast to Becker et al who reported a higher prevalence among heterosexual men and bi- or homosexual women, in our study we not find differences between the heterosexual and homosexual groups of patients, which are also in agreement with previous studies.
The presence of a previous STI or an illness of the genital area were related to the acquisition of MC. In our series, 17.8% of patients with MC reported a previous STI. Similar results were described by Radcliffe et al, who reported even a higher prevalence, observing that 30.4 % of men and 32.1% of women with MC had a concomitant STI.
The prevalence of HIV infection in patients with MC was higher in the study from Villa et al when compared with our results (6.5% vs 3.9%).
A potential relationship between MC and immunosuppression was also investigated. Four MC cases developed in immunosuppressed patients due to a known HIV infection. Among those cases with a known persistent immunosuppression (HIV or patients under immunosuppressive drug treatment -either corticosteroids or calcineurin inhibitors) the infection was localized more often in the face (5 out of 15 cases). A possible relation between MC appearance and the use of topical immunosuppressive drugs has been previously described.
We also focused on pubic hair removal, since recently some authors have postulated a possible relationship with MC acquisition that could explain the rise in the incidence of the disease among young adults. We did not find statistical differences between pubic hair removal between patients and controls, suggesting that this very common practice (97 out of 179: 54% in our series) cannot be significantly related to the development of MC.

Limitations

The reduced size of the evaluated sample size and secondly a high rate of refusals in the healthy control group (30%) could contribute to the lack of detection of significant differences.
Our study does not go into detail about swimming pool practices, whether if patients use public or private ones, the presence of kids in them who might be affected of MC or the use of towels or sponges which may act as fomites. Neither goes further into asking about differences in pubic hair removal practices (shaving, clipping, waxing...) that could have been of help in casting some light on these issues.

Conclusions

In conclusion, MC in adults could be considered in some instances a sexual transmitted disease. The frequent history of a previous STI, the observation of MC lesions in sexual contacts and the possible association of HIV infection seem to support this concept. However, other risk factors, not related to STI, seem also to be significant and deserve further investigation, such as the pool usage or immunosupression.

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