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CASE REPORT **OPEN ACCESS**

Perioral dermatitis associated with pelvic inflammatory disease

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ABSTRACT
Perioral or periorificial dermatitis is an itchy condition characterized by multiple papular and vesicular eruptions due to implicated causative factors like barrier destruction, cosmetic products, dental procedures like dental fillings, toothpaste and can also be associated with some infective cause. In our case perioral dermatitis resolved on treating pelvic inflammatory disease (PID) pointing towards the association of same etiology behind PID and perioral dermatitis. It is most likely an immune reaction to the causative organism of chronic PID because of molecular mimicry.
Key words: *Perioral dermatitis (POD), Pelvic inflammatory disease (PID)*

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INTRODUCTION

Perioral dermatitis (POD) or periorificial dermatitis is defined as multiple itchy papular and vesicular eruptions in the perioral region most commonly affecting children and middle aged women. It has been attributed to barrier destruction, cosmetic products, dental procedures like dental fillings, toothpaste and can also be associated with some infective cause. Indiscriminate use of steroids that is itself used in the treatment of perioral dermatitis is also responsible for its persistence. Treatment of perioral dermatitis includes topicals or systemic treatment depending upon the underlying cause.[1] In our case perioral dermatitis resolved on treating pelvic inflammatory disease(PID) pointing towards the association of same etiology behind PID and perioral dermatitis. Hence, we present a case of perioral dermatitis associated with PID.

CASE REPORT

27 year old, female patient came to dermatology OPD with chief complaint of scaly and oozy lesions over lips and perioral region associated with itching since last 6 months (Fig. 1). The lesions did not improve despite of regular usage of lip balms. The patient also had a history of irregular menstrual cycle, dysmenorrhea and white discharge. She was not married.

On cutaneous examination, multiple vesicular lesions with erythematous background were seen in the perioral region. Scaling and oozing were also present. On examination patient had lower abdominal tenderness without any muscle guarding or rebound tenderness. On Per-vaginal examination she had fornicial tenderness suggestive of pelvic inflammatory disease.

Ultrasonographic findings showed cervicitis and bulky ovaries and mild fluid in pouch of Douglas. Urine routine and microscopy showed 14 pus cells/hpf in centrifuged specimen, however culture did not grow any organism.

She did not give any history of use of any new cosmetic product or change of toothpaste or did not have habit of licking her lips. She did not have any other systemic illness.

The patient was given capsule doxycycline twice daily for 15 days along with a lip emollient. On review after 15 days, lower abdominal tenderness had decreased but mild tenderness still persisted. She was advised additional 15 days of doxycycline. She improved clinically with decreased lesions in the perioral region within a month of treatment (Fig. 2). Per-abdominal and per-vaginal examination was normal. Urine routine and microscopy was repeated and the pus cells reduced significantly to 3 pus cells/hpf.

On monthly follow up she had regular menstrual cycle, no dysmenorrhea and no white discharge. Per abdominal examination was normal. Perioral lesions had completely resolved without any recurrence even after five months.

Fig. 1. Perioral dermatitis in a case of pelvic inflammatory disease.

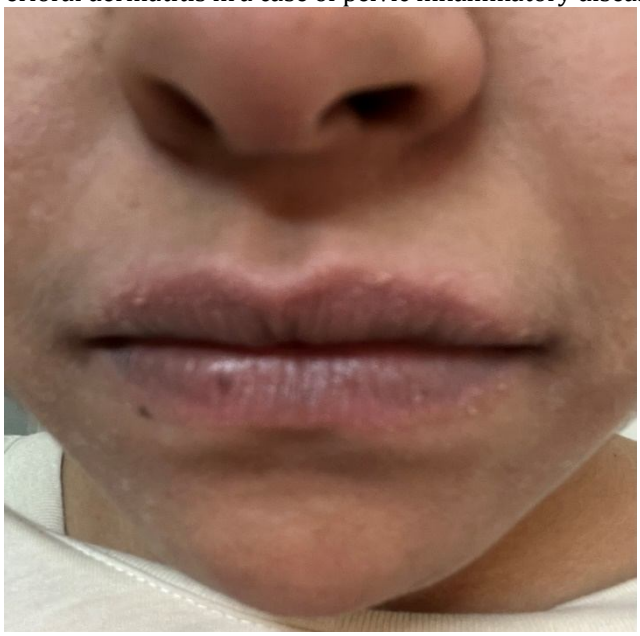
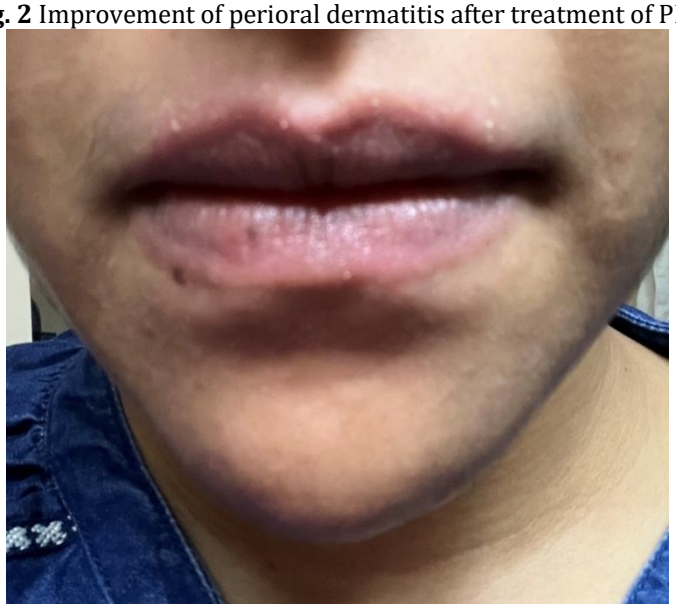


Fig. 2 Improvement of perioral dermatitis after treatment of PID.



DISCUSSION

Perioral dermatitis(POD) presents as erythematous lesions composed of tiny papules and papulopustules distributed primarily around the mouth. It is persistent and chronic in nature. It follows a waxing and waning course without treatment.[2]Infections, corticosteroids and cosmetics have been reported as majorly responsible for perioral dermatitis. Infections include fusobacterium, *Demodex folliculorum* and *Candida albicans* have been implicated. Cosmetics have molecules that carry an irritant potential. Corticosteroid are used in the treatment of perioral dermatitis but patients end up having a relapse after its discontinuation making it a vicious cycle of remission and relapse. It then leads to usage of steroids for a longer duration and ultimately it creates an imbalance of microflora further triggering perioral dermatitis. Patients with POD are hyper-reactive with impaired barrier function making it more prone to irritants and one the examples that holds relevance in today's world is usage of masks due to COVID19 that leads to friction and barrier destruction.[1] Treatment of perioral dermatitis is very challenging. Treatment options available for perioral dermatitis are topicals including steroids, metronidazole, clindamycin, pimecrolimus, tacrolimus, clindamycin, adapalene and oral medications like tetracycline, erythromycin, doxycycline, isotretinoin.[3]

Pelvic inflammatory disease(PID) is infection of female upper reproductive tract involving cervix, endometrium, fallopian tubes and ovaries. It is mostly caused due to *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Mycoplasma genitalium*.[4]*Chlamydia trachomatis* is most commonly associated with

chronic PID. Chlamydial PID presents as lower abdominal pain with cervical motion tenderness or uterine or adnexal tenderness on examination.[5]

According to our hypothesis, most likely cause of perioral dermatitis in sexually active/mensurating females is pelvic inflammator6y disease. PID in females especially due to *Chlamydia trachomatis* is more of a hygienic issue even before they are sexually active. Sexual activity leads to recurrent urinary tract infection due to non-specific organisms like *Chlamydia trachomatis, Mycoplasma genetalium* and *Ureaplasma urilyticum.* These organisms do not grow on normal cultures and require cell culture, being obligate intracellular parasites. This was what was seen in our case as well. Tetracyclines have been shown to improve perioral dermatitis. [3] It is most likely that the improvement seen is such cases is because of treatment of chronic genitourinary infection. Perioral dermatitis due to chlamydia is most likely a reactive phenomenon due to molecular mimicry to chlamydial antigen. Some of the irritants implicated in causation of POD may be exposing the cryptic antigens to the immune system as is seen in reactive arthritis/Reiter's disease. It is very important to screen all cases of perioral dermatitis in females for PID, since it is not only important to treat the patient but also the sexual partner to prevent any recurrences.

CONCLUSION

Perioral dermatitis is not very uncommon but its association with PID has not been reported in the literature. Hence, we present a case of perioral dermatitis associated with PID wherein perioral dermatitis improved once we treated PID. It is most likely an immune reaction to the causative organism of chronic PID because of molecular mimicry.

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