

Intralesional Immunotherapy with Measles-Mumps-Rubella Vaccine for Recalcitrant Facial Warts: A Report of Two Cases

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ABSTRACT

Warts are common benign skin tumors caused by human papilloma viruses. Recalcitrant facial warts tend to be cosmetically embarrassing to patients and difficult to treat for doctors. Recently, intralesional immunotherapy by antigens like Bacille Calmette–Guerin vaccine, candida antigen, and measles, mumps, and rubella (MMR) vaccine has shown promising efficacy. Here, we report two cases of Omani men who presented with recalcitrant facial warts that resolved completely with a single intralesional injection of the MMR vaccine.

Warts are very common benign epithelial tumors caused by human papillomaviruses (HPVs), a large family of small, non-enveloped, double-stranded DNA viruses.¹ More than 180 different types of HPVs have been sequenced.² The HPV type involved, the affected anatomical location and the immune status of the host determines the clinical manifestation of the warts which may present as common, plane, plantar, filiform or digitate, myrmecia, mosaic, genital, and periungual warts.^{3,4} There is no consensus for the

definition of recalcitrant warts, but it is generally described as warts that persist for more than six months after failure of at least five treatment sessions.⁵

Most people seek treatment for facial warts as they are cosmetically disfiguring.⁶ Many topical, destructive, and immunotherapeutic modalities are available for treatment but none is 100% effective.⁷ Recently, intralesional antigen immunotherapy has shown promising efficacy and tolerance in the treatment of warts including the facial ones.⁷ We report two cases of recalcitrant facial warts presented during 2019. Both cases was completely resolved



Figure 1: (a) Numerous warts over the beard area of the face and neck of a 38-year-old male. (b) Two weeks post treatment with single intralesional injection of the MMR vaccine, showing complete clearance.



Figure 2: (a) Common warts over the chin and neck of a 42-year-old male. (b) After treatment with a single intralesional injection of the MMR vaccine bilaterally.

with a single intralesional injection of the Measles-Mumps-Rubella (MMR) vaccine.

CASE REPORTS

Case one

A healthy 38-year-old Omani male presented to the Dermatology Clinic at Nizwa Polyclinic, Oman, with eight months history of asymptomatic skin lesions over his chin and neck. These had increased after several visits to the barbershop during which razors were used for shaving. The examination showed numerous (about 60) flat-topped and verrucous papules over the submandibular area of the neck [Figure 1a]. Before presentation, he underwent six sessions of cryotherapy at a private dermatology center which resulted in clearance, but the lesions kept recurring. A clinical diagnosis of common and filiform warts was made. Treatment with intralesional MMR was suggested, to which he agreed verbally. We injected 0.2 mL of the MMR vaccine into the two biggest warts. No complications were reported apart from mild temporary pain during the injection. No adjunctive treatment was used. On follow-up after two weeks, the facial warts had cleared completely [Figure 1b], and on subsequent follow-ups after two and six months, there was no recurrence.

Case two

A 42-year-old man presented to the dermatology clinic at Nizwa Polyclinic with one-year history of a papular eruption on his face. He attributed

the eruption to a recent barbershop visit. He had previously been unsuccessfully treated with imiquimod cream, cryotherapy, and electrocautery. He had no co-morbidities and was not using any oral medications. The examination showed multiple (about 40), tiny, and grouped monomorphic papules bilaterally distributed over the mental area of the face [Figure 2a]. A clinical diagnosis of recalcitrant cutaneous warts was made. Treatment with intralesional MMR vaccine was offered, to which he agreed. We injected 0.1 mL of the MMR vaccine into the biggest papule bilaterally. No other treatment was given. Follow-up after one month showed complete resolution [Figure 2b], and further follow-up after three months showed no recurrence. No complications were reported.

DISCUSSION

Viral warts are highly contagious and can spread via direct skin contact, especially if there are predisposing factors like skin maceration.⁸ In our cases, the cause might be attributed to contamination at the barbershop. Many men in Oman visit barbershops weekly for beard trimming and shaving. Proper sanitation is uncertain at these places, which raises a public health concern. Local spreading of pre-existing warts (pseudo-koebnerization) is common after hair removal methods involving skin breach; therefore, instead of razors, electric trimmers are suggested for men with existing facial warts,⁹ who should also refrain from touching their warts to

minimize the spread to other parts of the body and to other people.

Many modalities for treatment have been reported for facial warts including topicals, systemic medications, destructive methods, and intralesional immunotherapy.⁷ Imiquimod cream, approved by Food and Drug Administration for genital warts, has also been used effectively for facial warts, especially the plane ones.^{10,11} Its disadvantages include the risk of post-inflammatory hyperpigmentation (PIH) and high cost. Clouth et al,¹² reported sinecatechins ointment which has minimal side effects. Topical cantharidin, a vesicant produced by beetles in the order Coleoptera, is another option,¹³ but has the risk of PIH, especially in skin types 3 to 5, and scarring.

Oral isotretinoin, a retinoid used primarily for severe acne, is also reported to be effective for recalcitrant facial plane warts (fixed dose of 30 mg/day or a mean dose of 0.5 mg/kg/day for at least 12 weeks).^{14,15} Drawbacks include the prolonged treatment period, side effects like cheilitis and dry eyes, as well as the need for monitoring lipid profile and liver function.

Laser and light therapies are also used to treat recalcitrant facial warts.⁸ Pulsed dye laser at 585 nm wavelength has high clearance rates.¹⁶ This option is limited by cost, the requirement of multiple visits, and pain. Yttrium aluminum garnet laser is a single-session treatment option, but is expensive and carries the risks of scarring and PIH.¹⁷ Intralesional 2% zinc sulfate solution is another uncommon treatment, but needs special preparation and can cause cosmetically unacceptable textural changes.¹⁸

Intralesional immunotherapy by different agents like the MMR vaccine, *Candida albicans* antigen, purified protein derivative (PPD) vaccine, and Bacillus Calmette–Guérin vaccine have gained recent attention for treating warts, including the recalcitrant ones. Among them, PPD and MMR are considered as the most effective modalities for lesion clearance at primary and distant sites and also reduce recurrence.¹⁹ The mechanism of intralesional immunotherapy is still unknown but is reportedly associated with the release of immunoregulatory cytokines such as interleukins-2 and 12, interferon α , and tumor necrosis factor- α , which stimulate strong immune response against HPV.^{20,21}

In an open-label study, Nofal et al,⁷ studied intralesional injection with 0.3 mL MMR vaccine for 65 patients with recalcitrant warts, 41 (63%)

had a complete response, and 2 had a recurrence. In another single-blinded randomized clinical trial by Awal et al,²² for common warts, the complete response was 68%. In both studies, most patients required more than one session. However, it is not stated how many among them had facial warts and their response rates. Temporary pain during the injection is the commonest side effect reported (as in our cases), other less frequently reported ones include flu-like symptoms, itching, erythema, and edema.^{7,22}

Regarding our two cases, both patients had complete response by a single intralesional injection of the MMR vaccine without any adjunctive treatment. However, further randomized clinical trials are needed to study the efficacy of intralesional MMR for patients with numerous recalcitrant facial warts.

CONCLUSION

Intralesional immunotherapy with the MMR vaccine seems to be safe and effective for recalcitrant facial warts and may save the patient from embarrassment and stress with minimal cost and time. Further larger studies are needed to assess the efficacy of this modality of treatment for patients with numerous facial warts.

Disclosure

The authors declare no conflicts of interest and certify that both the patients gave consent for their images and clinical information to be published, after being informed that their names would not be published but anonymity could not be guaranteed.

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