



Gentian Violet-Induced Oral Irritation

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Authors' contributions

This work was carried out in collaboration between all authors. Author VVB writing of the article, author DVJ created the photos, author DGP performed final proof of the text. All authors read and approved the final manuscript.

Case Study

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ABSTRACT

A 67 year old female was referred to the Department of oral medicine due to the lesions on the gingiva where she applied 1% aqueous gentian violet due to the gingival inflammation. She applied gentian violet during two days, two times a day. The pain was worsening as well as extension of the lesions. She was advised to stop applying gentian violet and was given mouthrinse consisting of hexetidinum, methylprednisolone and xylocaine to be used three times a day. After 10 days the lesions completely healed. This case highlights the fact the commonly prescribed agents might also induce oral toxic/irritational reactions in the oral cavity.

Keywords: Oral adverse reaction; gentian violet.

1. INTRODUCTION

Dyes of the triphenylmethane series have been widely used as topical agents in the therapy of bacterial and fungal infections. Gentian violet (GV), also known as crystal violet and methylrosanilinum chloride has been used in medicine for almost 100 years: as an antiseptic for external use, as an antihelminthic agent by oral administration, and more recently, as a blood additive to prevent transmission of Chagas' disease [1]. Most of the times, triphenylmethane dyes are considered weak sensitizers and there are not many report of

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contact sensitization to these dyes [2]. Despite its safety, one has to have in mind that gentian violet is not harmless and there have been reported cases of side effects in various parts of the body, primarily on the various mucosal surfaces. First case report on sensitization to gentian violet was published by Goldstein in 1940 which appeared after 3% gentian violet solution applied in intertriginous spaces indicating probably toxic or irritative reaction rather than an allergic one [3].

No serious side effects have been reported when used externally, however, oral administration can cause gastrointestinal irritation and intravenous injection can cause depression in the white blood cell count [4].

Throughout the world, it seems that only 20 cases so far regarding unwanted side effects upon GV have been described, usually on the skin, oral mucosa, eye and genitals [2,4,5,6,7,8,9]. Regarding oral cavity there have been reports where GV has been used for treatment of oral candidiasis in six neonates which lead to the development of blisters, ulcerations and pseudomembranes [5]. Another case report also in neonate 15 days old is described in the literature, however, mother used 10-12 times a day GV during four days. The same neonate developed on the ventral part of the tongue as well as in the sublingual area and in the gingival grooves violet-grayish plaques which could be peeled off leaving mucosa which was bleeding. The same authors reported that lesions looked like chemical burn [6]. However, this might be the consequence of inadequate use as mother used GV 10-12 times a day instead two times a day.

To our knowledge this is a first case of GV side effects in the oral cavity due to the regular use and documented so far in details.

2. CASE REPORT

A 67 year old female was referred to our Department with extensive ulcerations on the upper left and right vestibular and frontal gingiva, i.e. in every area where she applied with cotton stick 1% gentian violet aqueous suspension. She didn't have any lesions on the lower gingiva where she hasn't applied GV and all the other oral mucosa was free of lesions (Figs. 1 and 2). She was advised by her medical doctor to apply GV due to the gingival inflammation. After two days of application of GV two times a day lesions become worse. She reported that oral mucosal pain and lesions were even getting worse after applying GV. Otherwise patient takes regularly and for many years antihypertensive medication (Concor[®]), diuretics (Fursemide[®]) and anticoagulant therapy (Martefarin[®]). She didn't take any other medication such as analgesic, etc. Detailed medical history revealed that she had allergy to sulphonamides. The patient signed informed consent. Upon admission she was advised to stop taking GV and was given mouthrinse containing hexetidine (1 mg in 200 ml) 1 ml of methylprednisolonum (Depo Medrol[®], Pfizer, USA, 40 mg/ml and Xylocaine[®]). She refused taking of biopsy specimen. She was sent to routine laboratory blood tests as following: complete blood count, iron, ferritine and liver enzymes which were all within normal range. She was seen after two days, lesions became to heal, and after 10 days she was free of any oral lesions. Patient also refused re-challenge test, patch test and prick test.

3. DISCUSSION

Gentian violet has been used with various frequency throughout the world due to its antifungal, antihelminthic and antibacterial activities against gram positive bacteria. In the

developed countries its use has been limited probably due to more convenient treatment which are not so messy. Difficulties with its use include permanent purple staining on clothing and some patients develop vulvar irritation after application of gentian violet [1]. Although GV is widely used in the treatment of various conditions where skin and/or mucosal disinfection is required, in some circumstances, fortunately rarely it might evolve unwanted side effects.

Bajaj and Gupta [7] tested three hundred ninety patients with suspected contact dermatitis to topical medicaments were patch tested with various commercially available antibacterial agents to evaluate the incidence of contact hypersensitivity. The common sensitizers were nitrofurazone, neomycin, oxytetracycline, cetrimide, and framycetin. The least common sensitizers were sodium fusidate, chlorhexidine hydrochloride, and gentian violet. Pasricha and Gupta [8] tested 215 patients having contact dermatitis due to local antibacterial agents and revealed that 18 patients had positive test for brilliant green and one patient for gentian violet. Torres et al. [2] relatively recently described a case of women who developed erythematous, edematous and painful purple stained bullous lesions clinically similar to second degree burns on the lumbar area of the back where she applied an ointment containing 3% gentian violet to treat nephritic colic.

Walsh and Walsh [9] reported a case of severe haemorrhagic cystitis due to accidental injection of 1% of gentian violet in 2% alcohol through urethra. Zabala Egurrola et al. [10] reported superficial necrosis of the glans penis from irritation after topical treatment with 1% gentian violet. The foregoing condition resolved after withdrawal of treatment.



Fig. 1 and 2. Lesions on the both upper vestibular gingiva and mucosa, i.e. where the patient applied GV

Nyst et al. [11] reported that side effects of GV were local irritation and ulceration which were infrequent and reversible. Hodgson et al. [personal communication] showed that a low concentration of GV (0.00165%) was as effective as 1% GV solution and with fewer side effects and no staining. Jurevic et al. [12] reported aside from the oral mucosal staining, no serious side effects including mucosal burning, ulceration and taste disturbances were reported in the participants receiving the low concentrations of GV. In contrast several participants who received GV solutions at 0.0085% and 0.1% reported a bitter taste (6 out of 15) which resolved upon treatment discontinuation. No side effects were recorded at GV concentration of 0.00165%.

Our patient followed recommendation for GV use, i.e. two times a day, however, the lesions developed. This certainly shows that in susceptible patients, regular application might lead to the development of unwanted side effects. This patient was advised by her physician to use GV as she reported gingival inflammation. In Croatia, especially among older physicians and dentists and in those not well informed, it is quite common practice of prescribing GV, Tinctura adstringens and propolis based topical agents for the treatment of some oral conditions. Unfortunately, in some cases these seem to produce unwanted side effects.

CONCLUSION

Every medication applied locally or systemically might induce adverse oral reactions. Medications which have been on the market for many years and even when taken in regular doses, in susceptible individuals might lead to the unwanted adverse oral reactions.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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