



IRRITANT CONTACT DERMATITIS BY POVIDONE IODINE IN A NEONATE

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<p>Article Info <i>Received 15/03/2015</i> <i>Revised 27/04/2015</i> <i>Accepted 12/05/2015</i></p> <p>Key words: Irritant contact dermatitis, Neonate, Povidone iodine.</p>	<p>ABSTRACT Povidone iodine is the most widely used topical antiseptic preparation by almost all specialties. Irritant contact dermatitis can be unfortunate adverse reactions complicating its use. considering its broad spectrum of antibiotic coverage against most of the organisms it finds widespread use in most of the specialties as surgical scrub, douches, ointments. In addition to its antiseptic action, it also produces contact dermatitis, irritant dermatitis, which is mostly under diagnosed or misdiagnosed. Hence we report a case of irritant contact dermatitis due to povidone solution in a five days old neonate following application to umbilical stump. On conservative management with saline soaks and low potent topical steroids dermatitis improved well in a span of two days.</p>
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INTRODUCTION

Irritant contact dermatitis is a non allergic inflammatory reaction of the skin to an external agent. The acute type comprises of irritant reaction and acute irritant contact dermatitis. Irritant reaction to an exogenous source usually manifest as chemical burn, irritant reaction, acute irritant contact dermatitis and chronic irritant contact dermatitis. Acute irritant contact dermatitis manifest as monomorphic lesions like redness, vesicles, pustules and erosions which varies with the time of exposure, site, and individual susceptibility [1].

Povidone iodine widely used antiseptic is available as surgical scrub, aerosol spray, ointment, douche, shampoo, impregnated pad, and vaginal gel. In neonates, umbilicus is the most susceptible area for bacterial colonization, where variety of disinfectants are used especially povidone solution to which skin reactions have occasionally been reported.

We report a case of irritant contact dermatitis to povidone iodine, very commonly used antiseptic in a five day old neonate.

CASE REPORT

Five days old male neonate delivered by emergency cesarian section was referred to our dermatology outpatient department for evaluation of pustular lesions around the umbilicus of three days duration. The mother noticed a small pustule in the umbilicus since second day of birth for which 1% povidone iodine solution was applied, following which multiple pustules on an erythematous background developed within few hours. The prenatal and perinatal history was unremarkable with no history suggestive of maternal impetigo, scabies, herpes and immunosuppression in the mother. The general examination of baby revealed no abnormality with normal body temperature and the rest of the skin and mucous membrane were completely spared. On examination there was numerous pustules and erosions on an erythematous skin in the periumbilical site and the neonate was treated with saline soaks and low potent topical corticosteroids following which the lesions resolved in four days.

After complete resolution, the neonate skin was tested with povidone solution over affected and normal skin. Within three hours the neonate developed



erythematous and tiny vesicles which were suggestive of irritant contact dermatitis.

DISCUSSION

Irritant contact dermatitis and allergic contact dermatitis are common inflammatory skin diseases induced by contact with haptens [2]. Although both have similar presentations, they can be differentiated by its pathophysiology. Irritant contact dermatitis is a non specific inflammatory dermatitis brought about by the activation of innate immune system to a hapten which peaks within minutes to hours after exposure and then starts to heal. This is termed as decrescendo phenomenon [3]. Allergic contact dermatitis is a delayed type hypersensitivity reaction mediated by hapten specific T cells with a initial sensitization phase of 5-25 days and with subsequent exposure clinical reactions appear within 24-48 hrs[4]. Irritant contact dermatitis leads to alteration of permeability barrier, mild keratinocyte damage and release of inflammatory mediators particularly cytokines. The clinical manifestations of irritant contact dermatitis are variable and may be indistinguishable from allergic type which may mislead to assumption of allergic contact dermatitis. Iodine tincture has been used as germicide since

1839 and still remains the frequently used antiseptic [5]. Povidone iodine is an iodophore which is a complex of iodine and a carrier molecule that liberates free iodine in solution. This facilitates slow release of iodine,there by reducing its toxicity while retaining its effect. The most commonly used iodophore is polyvinyl pyrrolidine which has both physical and biological resemblance to plasma proteins. A10% pvp-1 solution contains 10% bound iodine and 1%free iodine [6]. Hence it has poor irritant property with good antiseptic efficacy and hence widely used as nonirritant, nontoxic antiseptic in various conditions. In hypersensitive patients to povidone iodine, clinical manifestations are skin sensitization, irritant contact, chemical burns, staining of skin and fabrics, contact urticaria and anaphylaxis[7]. Occlusion to the applied site results in irritation, maceration and necrosis of pressure sites and especially without dated povidone solution which was not in our case., Transient neonatal pustular melanosis develops in 5% of neonates characterized by prominent pustules presenting since birth was the closest differential diagnosis,but onset of lesions with short contact time with prominent erythema and monomorphic pustules were in favour of irritant contact dermatitis [8,9].

Table 1. Differences between Transient Neonatal Pustular Melanosis and Irritant contact dermatitis

Features	Transient neonatal pustular melanosis	Irritant contact dermatitis.
1.Onset	Birth	First few days to weeks
2.Morphology	Pustules without erythema; collarettes of scales; hyperpigmented macules.	Glazed erythema, vesiculation, punched out erosions.
3.Distribution	Any region; mostly in forehead, neck, lower back, shins.	usually in the area of contact
4.Diagnostic studies	Clinical, Wright’s stain:neutrophils, occasional eosinophils, cellular debris.	Usually clinical
5. Treatment	Spontaneous resolution with pigmentation	Resolves with topical steroids.

Figure 1. Before treatment



Figure 2. After Treatment



CONCLUSION

Considering the frequent use of povidone solution not only in babies but also in general population, we may conclude that irritant contact dermatitis to povidone iodine should be suspected when the lesions are localized to the site of application, worsening with continuous usage,

improvement following withdrawal of medications. Because of the immature skin of the neonate, parents should be educated to avoid unnecessary use of topical medications to traumatic skin with impaired skin barrier especially in a neonate.



ACKNOWLEDGEMENT

I am thank full to Professors, Assistant Professors and co-Postgraduates of the Department of Dermatology Raja Muthaiah Institute of Medical Sciences for their

inspiration to take up this study and they guided me at each & every step of this research work by giving useful suggestions and made me complete this work successfully.

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