CASE REPORT

AN INTERESTING CASE OF POVIDONE IODINE ALLERGY RESULTING IN 18-20 % CHEMICAL BURNS & ACUTE RENAL FAILURE

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Abstract :

Irritant contact dermatitis with chemical burns with acute renal failure induced by topical antiseptic povidone iodine is an uncommon complication.we hereby report our clinical experience with a 64 year old male developed Irritant contact dermatitis with chemical burns with acute renal failure induced by topical antiseptic povidone iodine during an emergency open appendicectomy.

Keywords: Chemical burns, irritant contact dermatitis, povidone iodine

INTRODUCTION

Iodine has been recognized as an effective broad-spectrum bactericide, and it is also effective against yeasts, molds, fungi, viruses, and protozoans. Drawbacks to its use in the form of aqueous solutions include irritation at the site of application, toxicity and the staining of surrounding tissues. These deficiencies were overcome by the discovery and use of PVP-I, in which the iodine is carried in a complexed form and the concentration of free iodine is very low. The product thus serves as an iodophor. In addition, it has been demonstrated that bacteria do not develop resistance to PVP-I, and the sensitization rate to the product is only 0.7%.

Povidone-iodine (**PVP-I**) is a stable chemical complexof polyvinyl pyrollidone (povidone, PVP) and elemental iodine. It contains from 9.0% to 12.0% available iodine. This was discovered at the Industrial Toxicology Laboratories in Philadelphia. They carried out tests *in vitro* to demonstrate anti-bacterial activity, and found that the complex was less toxic in mice than tincuture of iodine. Human clinical trials showed the product to be superior to other iodine formulations.

It was first sold in 1955, and has since become the universally preferred iodine antiseptic. Free iodine, slowly liberated from the povidone-iodine (PVP-I) complex in solution, kills eukaryotic or prokaryotic cells through iodination of lipids and oxidation of cytoplasmic and membrane compounds. This agent exhibits a broad range of microbicidal activity against bacteria, fungi, protozoa, and viruses.

Slow release of iodine from the PVP-I complex in solution minimizes iodine toxicity towards mammalian cells.

PVP-I has found broad application in medicine as a surgical scrub; for pre- and postoperative skin cleansing; for the treatment and prevention of infections in wounds, ulcers,

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cuts and burns; for the treatment of infections in decubitus ulcers and stasis ulcers; in gynecology for vaginitis associated with candidal, trichomonal or mixed infections. For these purposes PVP-I has been formulated as solution, spray, surgical scrub, ointment, and swab dosage forms. Last but not least povidone solutions used as topical application even in neonatal conjuctivitis in some centres.

Here, we report an case of irritant contact dermatitis with chemical burns with acute renal failure caused by the so-called, least toxic compound in iodine family, povidone iodine.

Case Report

A 64-year-old male ,a chronic alcoholic with negative history of previous drug allergy admitted with abdominal pain in right iliac fossa, and was clinically diagnosed as a case of acute appendicitis. patient was investigated with routine investigations(including renal function tests) which was found to be normal except TC & DC shows some inflamatory pathology. Was posted for emergency open appendicectomy under spinal anesthesia. After putting spinal anaesthesia. Patient scrubbed with 10 % povidone iodine and spirit from below the nipple to mid thigh in an usual way and draapped applied. appendicectomy was proceeded. The surgery was uneventful. after removing the linen after surgery we noticed hyper pigmentation and oedema of the povidone iodine scurubbed area. On first post operative day patient developed complete erythema corresponding to the area painted by 10% povidone iodine solution , the whole region turned brownish black in colour and progressed to blistering and patchy skin necrosis, and exfoliation such as chemical burns and anuria. Repeat renal function tests and USG abdomen and pelvis shows acute renal failure (Figure 1 and 2).



Figure 1: On first post operative day with hyperpigmentation and oedema of povidone painted area

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Figure 2: On 8 th post operative day

16/10/2013	Pre operative	103	1.1	-	1500	1350
Date	Post	Blood	Serum	Hemodialysis	Intake	Output
	operative day	Urea /mg%	Creatinine /mg%	sittings	ml	ml
17/10/2013	1	51	2.5	-		
19/10/2013	3	104	7.1	HD 1	2000	NIL
20/10/2013	4	90	6.9	HD 2	1500	75
21/10/2013	5	82	6.4	HD 3	1500	20
22/10/2013	6	59	6.4	HD 4	1500	NIL
23/10/2013	7	43	8.1	HD 5	1100	NIL

Post operative events

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24/10/2013	8	48	6.8	HD 6	500	10
25/10/2013	9	68	6.5	HD 7	800	NIL
26/10/2013	10	71	5.7	HD 8	1000	3
28/10/2013	12	96	7.2	HD 9	925	10
31/10/2013	15	96	7.5	HD 10	850	150
02/11/2013	17	91	7.8	HD 11	1000	100
04/11/2013		67	6.0	HD 12	1600	800
On discharge	22	45	3.0	-	1200	1200
7/11/2013						

Characteristic features of the lesion like the localization to the area of exposure to povidone iodine, extension of lesions to the region of skin folds along the flank due to gravitation of solution during the process of painting served as strong factors in supporting the diagnosis of povidone iodine-induced irritant contact dermatitis. Thereafter, the patient was managed by daily dressing with liquid paraffin local application, twelve sittings of hemodialysis and other supportive measures as and when required after getting nephrologist and dermatologist opinion. Lesions corresponding to 18-20% second and third degree chemical burns healed without extensive scarring.urea and creatinine level was gradually declined and urine output improved. Patient discharged on 22 nd POD.

DISCUSSION

Even though povidone iodine is classified as a non-irritant antiseptic, it is not completely devoid of corrosive action. Although the present case is one of the severest of its kind to be reported, some journals have reported similar cases of chemical burns induced by povidone iodine in a less severe form in patients undergoing surgeries and arteriographies.[1-3&6] A similar case report of povidone iodine-induced chemical burns states that the danger of such burns may be exaggerated with the use of an outdated povidone iodine solution,[4] although it was not so in our case. Burns of this kind, however, occur mostly in patients undergoing uro-gynecological surgeries, in which lithotomy position favors irritation, maceration, and necrosis of pressure points on the skin, like the painted area in this case.[5] Hence, irritant contact dermatitis should always be considered as a differential diagnosis in patients exposed to povidone iodine, developing lesions resembling burns, and in spite of an uncommon occurrence, stress has to be laid on the fact that this condition can be effortlessly prevented by just avoid long contact period and by checking for the expiry date on the label of the povidone iodine solution and a complete allergy screening before its use.

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