

Malodorous oozing lesions after local cancer treatment - ethacridine powder prevents local infection

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Abstract

A common problem in local cancer treatment is infection of the resulting superficial tumour necrosis. The malodorous oozing lesions not only severely interfere with the patient's quality of life but may also result in serious sequelae such as accelerated wasting, sepsis, and death. We developed a new formulation of the well-known antiseptic drug Ethacridine lactate in powder form to prevent such infections in local antineoplastic therapy. In a pilot study, the powder was applied in four patients receiving either an intralesional treatment with a platinum-based gel in the course of a study or photodynamic therapy. In all four patients with cervical respectively facial wounds with a surface of up to 80 cm² a virtually dry and odorless scabby lesion resulted with no signs of infection. These initial clinical experiences suggest that Ethacridine lactate powder may be of benefit in the prevention of infection in palliative intratumoural cancer treatment.

Introduction

Local antineoplastic treatment may result in superficial tumour necrosis and concerns for wound management. An infected lesion can lead to accelerated wasting, sepsis and death. Moreover, secretion and unpleasant smell severely interfere with the patient's quality of life and can result in social isolation. Therefore local wound conditions may be an important issue in palliative tumour treatment. In the course of an intralesional cancer treatment we observed a series of necrotic lesions with local super infection and loathsome odour. The administration of systemic antibiotics proved ineffective as the bacteria in the avascular necrotic material were not reached. As a dry lesion is less susceptible to

infection our aim was to develop a powder which at the same time dries the lesion and has a good anti-infective effect. We successfully attained this treatment goal with our new formulation of the well-known antiseptic agent Ethacridine lactate in powder form.

Materials and Methods

This prospective pilot study was conducted on three patients enrolled in a study of intralesional antineoplastic treatment and one patient being treated with photodynamic therapy. After approval of the ethics committee I of the Medical Faculty of the University of Heidelberg and after written informed patient consent, Ethacridine powder was applied to the patients. Their lesions ranged from 10 to 80 cm². In three of the four patients the local treatment with the powder started only when the patients already presented with an oozing and unpleasant smelling lesion. At this point, it was applied two to three times a day. As soon as the necrotic lesion was dry a single application per day was sufficient. In the fourth patient the powder was applied on a prophylactic basis once a day when the first signs of necrosis appeared. The tumour necrosis was sprinkled with as much of the powder that any fluid was sucked up, and then covered with a light sterile bandage. The powder was prepared as follows: Ethacridine lactate (Chinosolfabrik, Seelze, Germany) 5 g is mixed with 50 g of lactose (Caelo, Hilden, Germany). Colloidal anhydrous silica (Roth, Karlsruhe, Germany) 1 g and polyethylene glycol 6000 (Caelo, Hilden, Germany) 1 g are stirred in, and enough additional lactose (43 g) is added for a total composition weighing 100 g. The whole mixture is pulverized to homogeneity. The result is a fine, light-yellow, easily sprinkled powder. Because light degrades Ethacridine lactate to 2-ethoxy-6-aminoacridon, Ethacridine powder must be stored in opaque containers with tightly fitting lids.

Results

Two patients with intralesional chemotherapy and the one with photodynamic therapy presented already with an oozing and unpleasant smelling lesion. After application of Ethacridine lactate powder a dry eschar developed within the next one to two weeks while in the two patients with intralesional chemotherapy the intralesional treatment was going on. Even the huge necrotic lesion of about 80 cm² in the second patient was almost completely dry and without unpleasant odour (Figure 1).

After application of Ethacridine lactate powder resulted a virtually dry and odorless scabby

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lesion. In the fourth patient obtaining the powder applications on a prophylactic basis starting with the first signs of tumour necrosis the lesion remained dry so that a single application per day was enough throughout the treatment. In all patients the necrosis became a dry scab and there were no signs of inflammation. The powder was easy to sprinkle and did not clump. In the patient with photodynamic therapy the lesion healed completely within the next 6 weeks. In one patient with local intralesional chemotherapy resulted a complete remission after six applications once a week and there was an uncomplicated wound healing within the next three weeks. While the superficial necrosis remained dry the patient with the huge cervical lesion died of a rupture of the carotid artery which was reached by the tumor. The tumor of the patient with a facial lesion could be controlled by the intralesional chemotherapy for almost two years by repeated injections but could not be cured. By application of Ethacridine powder, the lesion could be



Figure 1. After application of Ethacridine lactate powder resulted a virtually dry and odorless scabby lesion.

preserved dry and without unpleasant smell during the whole time. Finally, the patient who had been heavily pretreated with all different treatment options killed himself because having no hope to definitely overcome the tumor.

Discussion

The use of a local antiseptic has some clear advantages over the topical application of antibiotics.¹ Generally, antiseptics are said to have fewer side effects than antibiotics. Nevertheless we are aware that both Ethacridine and most of the topically applied antibiotics are known to inhibit wound healing,² and both antiseptics and antibiotics can cause hypersensitivity reactions such as allergic eczema. On the other hand, nephrotoxicity and ototoxicity are well known adverse medical

events with antibiotics, especially aminoglycosides. While these adverse events occur especially with systemic treatment they are also encountered with local treatment. Thus, to avoid such side effects, it is reasonable to suggest local application of antiseptics instead of antibiotics for prophylaxis.

Currently Ethacridine is regarded as obsolete in chronic wound care.³ This may hold true if the healing of a wound is the paramount object. In palliative local tumour treatment resulting in necrotic oozing lesions, however, a dry scab without unpleasant odour is an excellent success with meaningful impact on the patient's quality of life. Being colourless and less irritating to tissues polyhexanid and octenidin would be advantageous alternatives.⁴ However, both of them are not available in powder form so that the production of a desiccant on their basis is not possible. Still the spectrum of Ethacridine is limited, so that florid infected wounds, especially in patients in reduced health, should be treated appropriately with antibiotics according to the antibiotic sensitivity pattern. There are, however, also recent reports of successful use of local Ethacridine in the treatment of severe necrotic lesions for example in Wegener's granulomatosis.⁵

Our experience suggests the use of Ethacridine lactate powder as a successful measure in treating infections at least as a prophylaxis in the case of tumour necrosis. Unlike untreated progressive tumours, necrotic lesions are avascular. Therefore, systemic antibiotics such as metronidazole are ineffective, as they cannot reach the bacteria colonizing the necrotic material. To prevent infections in such necrotic lesions, a local treatment is the method of choice. As a dry lesion is less susceptible to infection the goal of a preventive antiseptic treatment is to dry the lesion and to achieve at the same time a good anti-infective effect. We successfully attained this treatment goal with our new formulation of Ethacridine lactate powder indicating that it may be a valuable addition to the armamentarium for local cancer treatment. Even when applying the powder continuously for almost two years

there was no irritation or other local complication and local infection could be consequently prevented. Therefore even in the long run we expect a good long term effect.

The issue of a new prospective study is whether patients benefit of the powder in the mere palliative setting where no antineoplastic therapy is possible anymore and ulcerated tumours are still growing. In this situation the tissue is generally vascularized so that systemic antibiotics reach the infected wounds. Our preliminary experience is that the lesions become more dry and less odorous improving the effect of systemic antibiotics, but as the tumours go on growing they are not turning into a dry and odourless scab. In conclusion, Ethacridine shows the most striking effect in necrotic wounds after effective local antineoplastic treatment. The results of this pilot study are encouraging and merit further investigation in a greater number of patients.

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