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Topical nitrogen mustard

Nitrogen mustard (also known as mechlorethamine or mustine) belongs to a class of drugs known as alkylating agents. These agents slow or stop the growth of cancer cells in the body. Nitrogen mustard powder for injection is administered intravenously to treat certain types of cancers, however topical formulations of nitrogen mustard can be prepared to treat [cutaneous T-cell lymphomas](#), namely mycosis fungoides.

Topical preparations of nitrogen mustard are formulated by mixing the injectable powder with either water or an ointment base. The water preparation is unstable and needs to be used immediately, whereas ointment based preparations of nitrogen mustard are stable for at least a few months.

How does topical nitrogen mustard work?

Nitrogen mustard belongs to the group of alkylating agents that also include cyclophosphamide, ifosfamide, melphalan, chlorambucil and carmustine (BiCNU). Nitrogen mustard and carmustine can be used topically to treat cutaneous lymphomas. The mechanism of action is still uncertain.

What is topical nitrogen mustard used for?

Topical nitrogen mustard has been used for the treatment of mycosis fungoides since the 1950's. It is particularly effective in patch and/or plaque disease of mycosis fungoides. Complete response rates have been achieved in 76–80% of patients with limited patch/plaque (stage IA) and 35–68% in those with generalised patch/plaque (stage IB). It is also used for the treatment of [Langerhans cell histiocytosis](#).

How to use topical nitrogen mustard?

There are several different regimes. Topical nitrogen mustard (either the water-based preparation or the ointment-based preparation) may be applied daily until lesions resolve completely. This may be followed by a time of maintenance therapy for about 1–2 months.

The following general measures should be carried out when applying topical nitrogen mustard.

- First apply a small amount to a selected test patch (palm-size) on your skin once a day for 7–10 days. If there is no significant irritation, new rash, redness or itching you can then start to apply the nitrogen mustard preparation as directed by your doctor to lesions.
- Usually topical nitrogen mustard is applied once daily after showering or in the evening. Apply sparingly to the affected areas; the nitrogen mustard is usually absorbed into the skin within the first hour after application.
- Disposable gloves may be worn to apply the preparation or alternatively apply directly with your hands and wash thoroughly afterwards.
- Additional moisturising lotions or creams may be applied throughout the day as necessary.

Precautions

Do not apply on sensitive areas such as the face and genitals. The risk of developing secondary skin cancers is increased in patients who have received multiple skin treatments, such as phototherapy or radiation in addition to topical nitrogen mustard. Topical nitrogen mustard should be used with caution in pregnant or breastfeeding

women.

Side effects

The most common side effect is allergic reaction that usually results in itching, rash, or redness. This is especially a problem in more sensitive areas such as skin folds and occur whether an aqueous solution or ointment preparation is used. In most cases a reduction in frequency of application or decrease in concentration will lessen the side effects and allow continuation with the medication. Darkening of the skin in the area where the nitrogen mustard was applied may also occur; this is reversible once the medication is stopped.

Related information

References:

- Book: Textbook of Dermatology. Ed Rook A, Wilkinson DS, Ebling FJB, Champion RH, Burton JL. Fourth edition. Blackwell Scientific Publications.

On DermNet NZ:

- [Cutaneous T-cell lymphoma](#)
- [Langerhans cell histiocytosis](#)

Other websites:

- Drug Index
 - (Professional) - [Mechlorethamine](#). BC Cancer Agency
 - (Patient) - [Mechlorethamine ointment](#)

Books about skin diseases:

See the [DermNet NZ bookstore](#)

Author: Vanessa Ngan, staff writer

DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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