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[Intervention Review]

Ivermectin and permethrin for treating scabies

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ABSTRACT

Background

Scabies is an intensely itchy parasitic infection of the skin. It occurs worldwide, but is particularly problematic in areas of poor sanitation, overcrowding, and social disruption. In recent years, permethrin and ivermectin have become the most relevant treatment options for scabies.

Objectives

To assess the efficacy and safety of topical permethrin and topical or systemic ivermectin for scabies in people of all ages.

Search methods

We searched the following databases up to 25 April 2017: the Cochrane Infectious Diseases Group Specialized Register, CENTRAL, MEDLINE, Embase, LILACS, and IndMED. We searched the World Health Organization International Clinical Trials Registry Platform, the ISRCTN registry, CenterWatch Clinical Trials Listing, ClinicalTrials.gov, TrialsCentral, and the UK Department of Health National Research Register for ongoing trials. We also searched multiple sources for grey literature and checked reference lists of included studies for additional trials.

Selection criteria

We included randomized controlled trials that compared permethrin or ivermectin against each other for people with scabies of all ages and either sex.

Data collection and analysis

Two review authors independently screened the identified records, extracted data, and assessed the risk of bias for the included trials.

The primary outcome was complete clearance of scabies. Secondary outcomes were number of participants re-treated, number of participants with at least one adverse event, and number of participants withdrawn from study due to an adverse event.

We summarized dichotomous outcomes using risk ratios (RR) with 95% confidence intervals (CI). If it was not possible to calculate the point estimate, we described the data qualitatively. Where appropriate, we calculated combined effect estimates using a random-effects model and assessed heterogeneity. We calculated numbers needed to treat for an additional beneficial outcome when we found a difference.

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We assessed the certainty of the evidence using the GRADE approach. We used the control rate average to provide illustrative clearance rates in the comparison groups.

Main results

Fifteen studies (1896 participants) comparing topical permethrin, systemic ivermectin, or topical ivermectin met the inclusion criteria. Overall, the risk of bias in the included trials was moderate: reporting in many studies was poor. Nearly all studies were conducted in South Asia or North Africa, where the disease is more common, and is associated with poverty.

Efficacy

Oral ivermectin (at a standard dose of 200 μ g/kg) may lead to slightly lower rates of complete clearance after one week compared to permethrin 5% cream. Using the average clearance rate of 65% in the trials with permethrin, the illustrative clearance with ivermectin is 43% (RR 0.65, 95% CI 0.54 to 0.78; 613 participants, 6 studies; *low-certainty evidence*). However, by week two there may be little or no difference (illustrative clearance of permethrin 74% compared to ivermectin 68%; RR 0.91, 95% CI 0.76 to 1.08; 459 participants, 5 studies; *low-certainty evidence*). Treatments with one to three doses of ivermectin or one to three applications of permethrin may lead to little or no difference in rates of complete clearance after four weeks' follow-up (illustrative cures with 1 to 3 applications of permethrin 93% and with 1 to 3 doses of ivermectin 86%; RR 0.92, 95% CI 0.82 to 1.03; 581 participants, 5 studies; *low-certainty evidence*).

After one week of treatment with oral ivermectin at a standard dose of 200 µg/kg or one application of permethrin 5% lotion, there is probably little or no difference in complete clearance rates (illustrative cure rates: permethrin 73%, ivermectin 68%; RR 0.93, 95% CI 0.74 to 1.17; 120 participants, 1 study; *moderate-certainty evidence*). After two weeks of treatment, one dose of systemic ivermectin compared to one application of permethrin lotion may lead to similar complete clearance rates (extrapolated cure rates: 67% in both groups; RR 1.00, 95% CI 0.78 to 1.29; 120 participants, 1 study; *low-certainty evidence*).

There is probably little or no difference in rates of complete clearance between systemic ivermectin at standard dose and topical ivermectin 1% lotion four weeks after initiation of treatment (illustrative cure rates: oral ivermectin 97%, ivermectin lotion 96%; RR 0.99, 95% CI 0.95 to 1.03; 272 participants, 2 studies; *moderate-certainty evidence*). Likewise, after four weeks, ivermectin lotion probably leads to little or no difference in rates of complete clearance when compared to permethrin cream (extrapolated cure rates: permethrin cream 94%, ivermectin lotion 96%; RR 1.02, 95% CI 0.96 to 1.08; 210 participants, 1 study; *moderate-certainty evidence*), and there is little or no difference among systemic ivermectin in different doses (extrapolated cure rates: 2 doses 90%, 1 dose 87%; RR 0.97, 95% CI 0.83 to 1.14; 80 participants, 1 study; *high-certainty evidence*).

Safety

Reporting of adverse events in the included studies was suboptimal. No withdrawals due to adverse events occurred in either the systemic ivermectin or the permethrin group (*moderate-certainty evidence*). Two weeks after treatment initiation, there is probably little or no difference in the proportion of participants treated with systemic ivermectin or permethrin cream who experienced at least one adverse event (55 participants, 1 study; *moderate-certainty evidence*). After four weeks, ivermectin may lead to a slightly larger proportion of participants with at least one adverse event (extrapolated rates: permethrin 4%, ivermectin 5%; RR 1.30, 95% CI 0.35 to 4.83; 502 participants, 4 studies; *low-certainty evidence*).

Adverse events in participants treated with topical ivermectin were rare and of mild intensity and comparable to those with systemic ivermectin. For this comparison, it is uncertain whether there is any difference in the number of participants with at least one adverse event (*very low-certainty evidence*). No withdrawals due to adverse events occurred (62 participants, 1 study; *moderate-certainty evidence*).

It is uncertain whether topical ivermectin or permethrin differ in the number of participants with at least one adverse event (*very low-certainty evidence*). We found no studies comparing systemic ivermectin in different doses that assessed safety outcomes.

Authors' conclusions

We found that for the most part, there was no difference detected in the efficacy of permethrin compared to systemic or topical ivermectin. Overall, few and mild adverse events were reported. Our confidence in the effect estimates was mostly low to moderate. Poor reporting is a major limitation.

2 April 2019

Up to date

All studies incorporated from most recent search

All eligible published studies found in the last search (25 Apr, 2017) were included and one ongoing study was identified (see 'Characteristics of ongoing studies' section)

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PLAIN LANGUAGE SUMMARY

Ivermectin and permethrin for treating scabies

What is the aim of this review?

The aim of this Cochrane Review was to assess the efficacy and safety of topical permethrin and topical or systemic ivermectin for scabies in people of all ages. We searched for all relevant studies to answer this question and found 15 studies, which we collected and analysed.

Key messages

We found that for the most part, there was no difference detected in the efficacy of permethrin compared to systemic or topical ivermectin. Overall, few and mild adverse events were reported. Our confidence in the effect estimates was mostly low to moderate. Poor reporting of studies was a major limitation.

Additional high-certainty studies are needed to strengthen the confidence in the results and improve the evidence base.

What was studied in the review?

Scabies is an intensely itchy parasitic infection of the skin. It occurs throughout the world, but is particularly problematic in areas of poor sanitation, overcrowding, and social disruption. In recent years, permethrin and ivermectin have become the most relevant treatment options for scabies.

We examined topical permethrin, topical ivermectin, and systemic ivermectin as a treatment for scabies in women and men of all ages. We assessed efficacy as complete clearance of skin lesions at different time points after the start of the treatment. Other outcomes were the number of participants re-treated, the number of participants with at least one adverse event, and the number of participants who stopped participating in the study because they experienced an adverse event.

What are the main results of the review?

We found 15 relevant studies. Nearly all studies were set in South Asia or North Africa. These studies compared systemic ivermectin with topical permethrin, topical ivermectin with topical permethrin, or systemic ivermectin with topical ivermectin to treat people with scabies. All studies were conducted at a single centre with mostly small numbers of participants per study group.

Oral ivermectin may lead to slightly lower rates of complete clearance after one week compared to permethrin cream (*low-certainty evidence*), but little or no difference in rates of complete clearance by week two (*low-certainty evidence*). Treatments with one to three doses of ivermectin or one to three applications of permethrin may lead to little or no difference in rates of complete clearance after four weeks (*low-certainty evidence*).

There is probably little or no difference in complete clearance rates after one week of treatment with oral ivermectin or one application of permethrin lotion (*moderate-certainty evidence*).

There is probably little or no difference in rates of complete clearance between systemic ivermectin at standard dose and topical ivermectin lotion four weeks after initiation of treatment (*moderate-certainty evidence*). Likewise, after four weeks, ivermectin lotion probably leads to little or no difference in rates of complete clearance when compared to permethrin cream (*moderate-certainty evidence*), and there is little or no difference among treatments with systemic ivermectin in different doses (*high-certainty evidence*).

No participants in the systemic ivermectin or the permethrin group stopped participating in the study because they experienced an adverse event (*moderate-certainty evidence*). Two weeks after treatment initiation, there is probably little or no difference in the proportion of participants treated with systemic ivermectin or permethrin cream who experienced at least one adverse event (*moderate-certainty evidence*). After four weeks, ivermectin may lead to a slightly larger proportion of participants with at least one adverse event (*low-certainty evidence*).

Adverse events in participants treated with topical ivermectin were rare and of mild intensity and comparable to those with systemic ivermectin. For this comparison, it is uncertain whether there is any difference in the number of participants with at least one adverse event (*very low-certainty evidence*). No participants in the topical or systemic ivermectin group stopped participating in the study because they experienced an adverse event (*moderate-certainty evidence*).

It is uncertain whether topical ivermectin and permethrin differ in the number of participants with at least one adverse event (*very low-certainty evidence*). We found no studies comparing one dose versus two doses of systemic ivermectin that assessed safety outcomes.

How up-to-date is this review?

We searched for studies published up to 25 April 2017.

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