Research Article

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Adverse Events after Mass Ivermectin Treatments for Scabies in Ethiopia, 2016/17

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ABSTRACT

Background: *Ivermectin is structurally similar to the macrolide antibiotics, but does not have antibacterial activity. It is, however, active against number of ecto- and endoparasites. It has been extensively employed in veterinary medicine, and in humans it is used to treat filarial diseases, principally onchocerciasis. In the year 2016/2017, scabies out break were happened in Ethiopia especially in two zones of Amhara region i.e South Wollo and south Gondar due to illino. Thus, in order to break the infection cycle WHO recommended providing ivermectine as mass drug administration.*

Objective: *To determine the adverse effects of oral Ivermectin in patients who were treated for scabies outbreak in South Gondar, Ethiopia.*

Patients and Methods: *This non randomized, study was conducted in South Gondar, Ethiopia. 90 patients from 90 households and three woredas' were included to the study after the patients were treated for scabies.*

Results: *All patients completed therapy with a certain mild adverse effects of the drug. Moreover, the prevalence of any reported adverse event ranged from 2.9% to 5.8% excluding a persons who weight less than 6killo grams (age less than 2years), non-pregnants and lactating mothers were excluded. Most of the adverse events were appeared on males and children. Mass administrations of ivermectine distributions were well tolerated, relatively effective, handy and easy to use for the patients as well as health professionals.*

Conclusion: *Ivermectin seems to be a safe and effective alternative to other ani-scabietic agents with few and relatively mild adverse effects.*

Keywords

Scabies, Ivermectin, Adverse effect.

Introduction

Scabies is a skin disease caused by infestation with the mite Sarcoptes scabiei. Although it may infest any human in any climate, it is most common in children younger than two years and is endemic in the tropics. The female mite, whose life expectancy is about 30 days, burrows into the epidermis to lay eggs. The eggs hatch into larvae in three to four days, and larvae mature into adults in 14 to 17 days.

Symptoms of scabies infestation include rash and intense pruritus that is often worse at night. The lesions begin as tiny erythematous papules and can progress to vesicles or pustules. Linear burrows are a classic feature but are not seen commonly. Excoriation and ulceration also may be present, and a more generalized hypersensitivity reaction, including urticaria, may occur. In severe cases and in immunocompromised hosts, large areas of crusting may be seen. Although outbreaks can occur almost anywhere, the axillae, web spaces between fingers, and flexor surfaces of the wrists are the most common areas.

There are lots of anti-scabietic agents with a various effectiveness and side effects after application and takin via per os. From these agents Ivermectine is the only per os drug that can be prescribed for scabies unconditionally. Ivermectine is very safe and effective anti-parasitic agent. Two rounds of MDA within roughly a two week period have the highest cure rate than other regimens as a two directly observed dose. The World Health Organization (WHO) recommends mass ivermectin distributions for the treatment of scabies where the prevalence in the area is more than 15% and for crusted type on HIV/AIDS patients, patients on immunosuppressive agents and other cases. Ivermectine can be give depending on their weight and age. Likewise for individual whose age lies between 2-6years-1, 7-12years-2, 13-18years-3 and above 184 tablets of Ivermectine is recommended.

Mass distribution of oral ivermectine is effective and safe in reducing the burden of scabies in a community. 2–3 Mass ivermectine treatments are also effective for several systemic infections, and may even reduce childhood morbidity and sometimes mortality of children and emaciated patients.

Moreover, ivermectine is thought to be well tolerated in most persons. However, previous studies have rarely assessed adverse events in multiple communities in a population-based fashion. We recently performed a cluster-randomized clinical trial in Ethiopia to compare the adverse effects of ivermectine (anti-scabetic) for the treatments of scabies outbreak. The current report describes population-based adverse event surveillance performed after two separate rounds of mass ivermectine treatment of scabies.

We conducted a cluster-randomized research for ivermectine between South Gondar zone, Tach Gaynt Woreda (District), Amhara Regional Health Bureau and IMC (NGO-International Medical Corps South Gondar and Meket catchment area), Ethiopia, during January-March 2008E.c. Which were conducted under a direct supervision of Mr Dawit (IMC coordinator in the catchment). The study area was located in a homogenous rural setting that had epidemic for scabies. In the research, 3 sub-kebeles (geographic administrative units) were had scabies out breaks due to a natural disasters. Thus, ivermectine treatment was provided for the treatment of scabies in the kebeles after providing training for health workers. Ivermectine was given either based on weight or age (where wt less than 6kg and age less than 2years were excluded). But most of ivermectine were administer based on respective age group (age 2-6years-1tab, 7-12years-2tabs, 13-18years-3tabs and above 18-4tabs for two doses in a separate week). Then after they took the second dose of ivermectine in a week interval following the previous line list, the respective assigned two nurses and one midwifery health professional who participated during administration and head of the health center were intended to collect the adverse events from 90 patients that they faced with after taking ivermectine (30 patients from each kebele-study population).

For all anti-scabietic distributions in the current study, Ivermectine, was offered to all persons ≥ 2 year of age; non-pregnants and non-lactating clients, administration was directly observed and noted in a treatment log book according to the line list. Ethical approval was obtained from Zonal health district and informed consent in Amharic was obtained from all study participants.

We estimated the proportion of persons in the kebele reporting an adverse event separately for children 2–12 years of age and for person's ≥ 13 years of age. We report adverse events separately for persons who received ivermectine versus those who did not. Although those who did not receive ivermectine may constitute a biased group, this group provides a comparison group to assess the adverse effect profile of ivermectine. We assessed for risk factors for experiencing an adverse event using multivariate mixed effects logistic regression models with household nested in village as random effects, and the following explanatory variables: age, sex, number of persons in the household, ivermectine treatment of the person at the most recent treatment, and number of previous mass ivermectine distributions to the community.

Objective

To determine the adverse effects of oral Ivermectin in patients who were treated for scabies outbreak in South Gondar, Ethiopia.

Patients and Methods

This non randomized, study was conducted in three woredas's of South Gondar, Ethiopia. 90 patients from 90 households were included to the study after the patients were treated for scabies outbreak. 2 years of age or older were enrolled in the study. Diagnosis was made on the basis of clinical features, including history and clinical examination with typical lesions and sites of involvement. Thus, more than 15% of the populations were suffered with scabies. So that Ivermectin mass administration was given for all patients whose age above 2 years received orally administered ivermectin, two doses of 200 µg/kg body weight separated by one week patients. Meanwhile, patients who received other agents in between of Ivermectin doses were excluded from the study. Finally, the patients were evaluated for the drug related adverse effects and effectiveness of ivermectine at the end of 4th week. The drug's efficacy was evaluated by the relief of clinical symptoms and disappearance of the lesions.

Results

We assessed adverse events in 90 households from 6 villages at the 3-months survey. Approximately 70% of eligible persons in the surveyed households received their allocated dose of ivermectine at each time point. At least one adverse event was documented in 67 households of 6 villages at the 3-month survey.

At the 3-months survey, adverse events were recorded in 5.8% from scabies treated children 2–12 years of age and for person's ≥ 13 years of age. At the 3-months survey, an adverse event was noted in 5.8% treated children and in 2.9% treated person's ≥ 10 years of age (Table 1). Factors associated with the presence of an adverse event one who took ivermectine for scabies patients (Table 2). The presence of an adverse event was associated with sex, age

and recent use of ivermectine treatment.

Adverse event	% (95% CI)	
	2–10 years of age, n = 45	≥ 11 years of age, n = 45
Fever	3.1 (0–14.0)	11 (3.1–21.0)
Abdominal pain	4.1 (0–7.0)	6.7 (0–13.0)
Vomiting	3.3 (0–7.0)	1.5 (0–2.0)
Nausea	11 (0–11.6)	2.1 (0–3.6)
Diarrhea	1 (0–9.7)	0 (0–2.4)
Dyspepsia	2 (0–7.5)	1.5 (0–2.0)
Constipation	1 (0–9.7)	0.7 (0–2.0)
Hemorrhoid	0 (0–11.6)	3. 2. (0.5–3.9)
Rash	1 (0–9.7)	0 (0–2.4)
Other	0 (0–11.6)	2.1 (0–3.6)

Table 1: Adverse events reported by treated community members after a mass ivermectine distribution, Ethiopia.
*CI = confidence interval. Because persons may have more than one adverse event, the sum of individual adverse events does not equal the percentage with any adverse event.

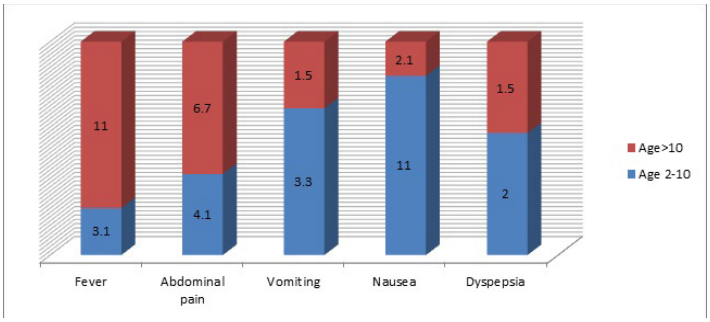

Figure 1: Bar chart shows common adverse effects of Ivermectin after administration or scabies outbreak.

Variable	OR (95% CI)
Male sex	2.40 (2.5–2.7)
Age, per decade	2.77 (1.16–6.63)
Number of previous mass treatments	0.94 (0.55–1.59)
Persons per household	0.91 (0.80–1.04)
Recent treatment for other illness	2. 2 (1.41–2.10)

Table 2: Factors associated with the presence of an adverse event in an area recently treated with mass oral ivermectine for scabies, Ethiopia*.
*Odds ratio (OR) and 95% confidence intervals (CIs) are from multivariate mixed effects logistic regression with the presence of any adverse event as the response variable and household nested in village as random effects.

Discussion

The most side effects of Ivermectin include fever, abdominal pain, vomiting, nausea, diarrhea, dyspepsia, constipation and rash. Many of these symptoms are thought to result from the death of parasites rather than as a reaction to the drug. Ivermectin seems to be concentrated in the liver and fat tissue, with very low levels reaching the central nervous system.

Results of this study are consistent with those of reports of mass Ivermectin treatment for scabies in Iran, which have reported adverse events Ivermectin has been reported to cause rare serious side effects, which are seen when the drug is used in high doses, such as when it is accidentally ingested. However, in our study, we found it to be safe without significant adverse effects. The low prevalence and relatively mild nature of adverse events observed in this study is similar to that of a research conducted in Islamabad.

Other scabies-ivermectin adverse effect studies have reported a higher occurrence of adverse events, although these reports are not directly comparable to this study because of differences in reporting adverse events, and because interviewers used a method in which they asked about specific conditions. In our study, we asked an open-ended question, which may have elicited fewer positive responses compared with other methods. Thus, our result relatively showed few mild side effects.

The current study design is noteworthy for several reasons. First, we offered treatment to all members of the community ≥21 year of age, as recommended by the WHO, and we monitored adverse events among all ages. The results are therefore generalizable to scabiesprevention programs that follow WHO guidelines. Second, we monitored 3 communities/woredas in each round of adverse event surveillance, which may provide a more accurate estimate by allowing for variation among and clustering within communities. Finally, the current study was conducted on a random sample of 90 households from a random sample of communities and can therefore provide valid estimates of the underlying population.

We observed fewer adverse events in children compared with older persons and male sex, even though ivermectin coverage was higher among children. This result could have arisen if survey respondents ignored, underestimated, or did not recall adverse events in children. Nonetheless, the low prevalence of adverse events in children is encouraging because this age group is the most likely to be infected with scabies and presumably would be the most likely to benefit from treatment.

Conclusion

Population-based surveillance of 3 communities, we found a low prevalence of adverse events after mass ivermectine distribution. The presence of an adverse event was more common in males, children less than 12, and in older persons who had received ivermectine treatment. This study provides further evidence that community-wide ivermectine treatments for scabies, as advocated by the WHO, are safe, effective and easy to administer.

Recommendation

- WHO, FMOH and RHB better to make the drug to be available in all service area at least in institution with dermatology department.
- WHO and FMOH better to make the drug of choice for scabies in routine classical scabies cases.

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