Ivermectin for COVID-19 in Peru: 14-fold reduction in nationwide excess deaths, p<0.002 for effect by state, then 13-fold increase after ivermectin use restricted

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Abstract

Objective. We aimed to identify mortality trends associated with COVID-19 deaths in Peru during April through November 2020, when mass treatments with ivermectin (IVM), a drug of Nobel Prize-honored distinction, were autonomously deployed at different times and to different extents in Peru's 25 states under a national policy that authorized these treatments.

Design. Ecological study of publicly available data. Excess deaths were analyzed state by state. To identify potential confounding factors, Google mobility data, population densities, SARS-CoV-2 genetic variations, seropositivity rates and other auxiliary data were also examined.

Primary outcome. Reductions in excess deaths, state by state, as compared with extent and time period of IVM treatments.

Participants. The study population was restricted to ages ≥ 60 to eliminate confounding effects of changing age distributions of COVID-19 incidence.

Results. The 25 states of Peru were grouped by extent of IVM distributions: maximal (mass IVM distributions through operation *MOT*, a broadside effort led by the army); medium (locally managed IVM distributions); and minimal (restrictive policies in one state, Lima). The mean reduction in excess deaths 30 days after peak deaths was 74% for the maximal IVM distribution group, 53% for the medium group and 25% for Lima. Reduction of excess deaths correlated with extent of IVM distribution by state with $p<0.002$ using the Kendall $\tau_b$test. Nationwide, excess deaths decreased 14-fold over four months through December 1, 2020, after which deaths then increased 13-fold when IVM use was restricted under a new president.

Conclusion. Mass treatments with IVM, a drug safely used in 3.7 billion doses worldwide since 1987, most likely caused these reductions in deaths during the time periods in which it was deployed. The indicated biological mechanism of IVM, competitive binding with SARS-CoV-2 spike protein, is likely non-epitope specific, possibly yielding full efficacy against emerging viral mutant strains.

Methods

These are two frozen database captures from: the National Death Information System (SINADEF): Ministerio de Salud de Peru. Available from: cloud.minsa.gob.pe/s/NctBnHXDnocgWAg/download, as downloaded on 12/13/2020 and 2/14/2021. Each dataset is a csv file containing about 590,000 records. A database map is also provided that documents the fields used in the analysis of the associated paper, and a brief description of all other fields (none contain PII).

Usage Notes

Please see the dataset documentation files "Readme..." and "Links to the key Peruvian national databases used, with a database map, for Ivermectin for COVID-19 in Peru.PDF." This documents the sources and the data structure of this file as used in the analysis of the associated paper ("Ivermectin for COVID-19 in Peru: 14-fold reduction in nationwide excess deaths, $p<0.002$ for effect by state, then 13-fold increase after ivermectin use restricted")