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Hypothesis: Gastric Acidity as a Possible Cause of Antimalarial Failure in Sudan

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Abstract: Malaria is an endemic disease in Sudan and represent one of major health problems influencing the fragile economy of the country, as many protocols established there, but still malaria cases exaggerated, certainly after the current conflicts between army and the paramilitaries. Wars, poverty, and their social consequences increase stress among local population, which regarded as on of the main causes of acidity, besides malnutrition, wrong feeding behavior and opportunistic infections with certain bacteria such as H. pylori and some fungi like overgrowth of candida species may elevate the blood acidity. Unfortunately, acidity affect absorption of antimalarials, then we suggested that usage of antiacids should preceed ingestion of antimalarial tabs to enhance its absoption, in order to clear malaria parasite from blood. Luckily, antiacids releive acidity of microbial origin, which is attibuted to candidal overgrowth or H. pylori infection, and then as we mentioned above increase clearance of plasmodium. Patient history of recurrent gastric acidity, stool analysis, H. pylori test and blood PH are recommended to avoid treatment failure of malaria patient. Besides antimalarial misuse among our local population in Sudan we suggested that gastric acidity is the one of the main reasons of antimalrial protocols failure in Sudan, specifically after choloroquine resistance. We hypothesized that usage of antiacids prior to administration of antimalarial drug will promote the effectiveness of antimalarials.

Keywords: Gastric acidity, Antimalarial drug failure, Sudan.

Review Paper

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INTRODUCTION

Resistance of falciparum malaria to chloroquine (CQ) has progressively developed in the late 1970s, reaching unacceptably high magnitudes over the following three decades of use as first line treatment in Sudan. In 2004–2006, CQ was replaced by artemisinin-based combination treatment (ACTs), with a combination of sulfadoxine pyrimethamine (SP) and artesunate (AS) deployed as first-line drug against falciparum malaria.

The high level of resistance (77%) in Kassala town (Kassala State) was attributed to population movements along the Eastern borders. One distinguished finding was that resistant cases in these low transmission areas were mostly children, leading to the presence of children as a subgroup when testing efficacy in low transmission settings as they have a higher risk of therapeutic failure [1].

Reduction of PH reduces the absorption of antimalarial drug (AD), and diminishes its effect [2]. On the other hand, stress resulted from war and, displacing, generate gastric acidity which affects the activity of AD, by impairing its proper absorption. Opportunistic infections such as H. pylori increase gastric acidity and promote AD resistance. As we mentioned above, resistance to antimalarial drugs is predominate in Kassala, eastern Sudan, where the prevalence of H. pylori is 21.8% among school aged children compared to 8.4% in THE whole country.

Some antimalarial drugs are used against certain microbial infections [3, 4], but their action is PH dependent, and gastrointestinal pathogens such as H. pylori and candida evade this AD by elevating acidity, which reduces the action of this drug.

CONCLUSION

We conclude that gastric acidity may represent one of the major causes of malaria protocol failure in Sudan and other developing countries, besides AD misuse and other factors.

Recommendations

1. A patient's history of recurrent gastric acidity should be considered before initiation of AD therapy.
2. Stool analysis is recommended; Candida, and even Entamoeba histolytica may reduce the absorption of AD, and then reduce its effect.
3. Helicobacter pylori test is recommended.
4. In the case of gastric acidity resulting from stress, antiacids must be used prior to AD.
5. Random control trials (RCT) recommended testing a new malaria treatment protocol, including both drugs antiacid and antimalarial.

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