MALARIA JOURNAL

POSTER PRESENTATION Open Access

Therapeutic efficacy of chloroquine and primaquine for *Plasmodium vivax* malaria treatment in southeast Iran

Aliehsan Heidari[1*], Hossein Keshavarz[2], Ahmad Raeisi[3]

From Challenges in malaria research
Basel, Switzerland. 10-12 October 2012

Background

Plasmodium vivax is the main cause of malaria infection in Asian, Central and South American countries [1]. It accounts for more than 90% annually of the reported malaria cases in Iran [2]. *Plasmodium vivax* resistant to chloroquine has emerged in some regions of Asia and resistance or tolerance to primaquine has been demonstrated in several countries [3,4]. The aim of this study was to determine the therapeutic efficacy of chloroquine and primaquine for *Plasmodium vivax* malaria treatment in southeast Iran.

Material and methods

A total of randomly selected 270 patients with confirmed *P. vivax* infection participated in 28-day *in vivo* study that extended for 2 years for detecting relapse infection. Chloroquine and primaquine were administrated during 3 days and 8 weeks respectively in 2010. The thick and thin film blood smears were screened for malaria parasites by microscopy. The nested PCR was applied using the *Plasmodium* 18 subunit ribosomal ribonucleic (Ssr RNA) genes for detecting mixed infections and diagnosis of parasites in the samples with low parasite on days monitoring the drug resistance.

Results

Fever resolved on the first day in all subjects. Microscopy findings showed that *P. vivax* was cleared in 15%, 50%, 95%, and 100% of patients on days 1, 2, 3 and 4, respectively. All 270 subjects showed ~120 Bp band in the nested PCR which was indicative of P. *vivax* malaria on the zero days. Six patients (2.2%) had specific *P. vivax* band in nested PCR on day 5. No recurrence was observed on days 7, 14 and 28 in thick blood smear and nested PCR. Mean (±standard deviation) parasite clearance time was 2.41 (±0.8) days. Two patients had *P. vivax* malaria clinical and parasitological infection following 8 and 12 months after primary *P. vivax* malaria infection.

Conclusions

The findings of this study showed susceptibility of *P. vivax* to chloroquine in South east Iran. This finding is compatible with results of neighboring countries Pakistan and Afghanistan. Nested PCR was a suitable assay to determine exact malaria parasite clearance time in our study. The further investigation is being conducted in two reinfection cases by PCR -Single strand conformational polymorphism method to differentiate between relapse and new *P. vivax* infection.

[1]Dept. of Pathobiology, School of Medicine, Alborz University of Medical Sciences, Karaj, Iran
Full list of author information is available at the end of the article

Author details
[1]Dept. of Pathobiology, School of Medicine, Alborz University of Medical Sciences, Karaj, Iran. [2]Dept. of Medical Parasitology and Mycology, School of Public Health, Tehran University of Medical Sciences, Iran. [3]Dept. of Medical Entomology and Vector Control, School of Public Health, Tehran University of Medical Sciences, Iran.

Published: 15 October 2012

References

1. Naing C, Kyan A, Khin Wine D, Wah MJ: **Efficacy and safety of Chloroquine for treatment in patients with uncomplicated *Plasmodium vivax* infections in endemic countries.** *Trans R SOC Trop Med Hyg* 2010, **104**:695-705.
2. WHO: **Malaria profile of Iran.** 2010, available: www.who.int/malaria/publications/country-profiles/profile_irn_en.pdf.
3. Awab GR, Pukrittayakamee S, Immwong M, Dondorp AM, Woodrow CL, Lee SJ, Day NPG, Singhasivanon P, White NJ, Kaker F: **Dihydroartemisinin-Piperaquine versus Chloroquine to treat *vivax* malaria in Afghanistan: an open randomized, non -inferiority trial.** *Malar Journal* 2010, **9**:105.

4. Yeshwondim AK, Tekle AH, Dengela DO, Yohannes AM: **Therapeutic efficacy of chloroquine and chloroquine plus primaquine for the treatment of *Plasmodium vivax* in Ethiopia.** *Acta Trop* 2010, **113**:105-113.

doi:10.1186/1475-2875-11-S1-P45
Cite this article as: Heidari *et al.*: Therapeutic efficacy of chloroquine and primaquine for *Plasmodium vivax* malaria treatment in southeast Iran. *Malaria Journal* 2012 **11**(Suppl 1):P45.