ORIGINAL ARTICLE

CAUSES OF FEVER IN ADULTS IN THALL AND SURROUNDING AREAS

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Background: The most common symptom for which the patients are admitted in our hospitals is fever. This study was carried out to know the causes of fever based on clinical and laboratory findings. **Methods:** In this cross sectional study, 865 consecutive male patients with fever of 100°F and above were included in the study conducted from January 2010 to April 2012. **Results:** All the patients were male having age between 17 years and 45 years. Out of the 865 patients, 507 (58.61%) came out to be malarial parasite slide positive, 186 (21.50%) patients were malarial parasite slide negative but were having clinical picture of malaria and responded to anti-malarial treatment, 73 (8.44%) patients were of respiratory tract infections, 21 (2.43%) patients were having gastro enteritis, 20 (2.31%) were diagnosed as cases of typhoid fever, 17 (1.97%) were having urinary tract infections, 24 (2.77%) patients were referred to medical specialist and the rest 17 (1.97%) were grouped as others. **Conclusion:** The most common cause of fever in our study was malaria. Respiratory tract infections are the second most common cause.

Keywords: Malaria, urinary tract infections, respiratory tract infections, Chloroquine.

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INTRODUCTION

To make effective prevention and treatment decisions, it is very important for public health officials and health care provider to know about local pattern of diseases. The incidence and prevalence of infectious diseases in many developing countries is either unknown or based on unreliable or irrational data.[1] Many of the developing nations lack advanced technology, infrastructure and investment in training which are required for the diagnosis of infectious diseases.[2] Presumptive treatment remains the standard of care even for relatively easily diagnosed febrile illness like malaria in many developing nations.[3]

One way to improve our knowledge about local pattern of infectious diseases is to select a site and study intensively those patients presenting with fever at that sentinel site (typically a hospital).

Some of those hospital-based studies have focused on diseases caused by bacteria and other included bacterial culture and serologic testing.[4–10] Results from these studies are very helpful in improving the diagnostic quality, enhancing the appropriate use of resources and improving local empirical treatment.[2]

In Thailand, three reports of studies of febrile illness have been published; febrile illness in children in a provincial hospital during flooding, the other two carried out at 10 community hospitals and were causes of acute fever of unknown origin in adults and children.[5,10,11]

The primary aim of our study was to know about the aetiology of fever in patients coming for treatment

MATERIAL AND METHODS

This cross-sectional study was carried out at Thall Scouts Hospital, Thall, Hangu, Khyber Pakhtunkhwa, which is located at the junction of North Waziristan Agency, Kurram Agency and Orakzai Agency in western Pakistan. In this hospital, only scout soldiers and their families are treated. It is a small set up like a primary health clinic, where facilities of only baseline investigations like chest X-ray, thick and thin slide for malaria, urine R/E and stool R/E are available. Widal test was used for typhoid fever diagnosis as no other test like typhidot was available.

A total of 865 patients with fever of 100F and above were admitted in this hospital from Jan 2010 to Apr 2012. Only male patients from 17 years of age to 45 years of age were included in the study as most of the soldiers are of this age group and as no facilities for female admission are available. On the basis of our available baseline investigations and clinical findings the causes of febrile illness were classified as follows: a) Patients whose thick or thin slides were positive for malarial parasite were labelled as “slide positive malaria”. b) Patients whose slides were negative for malarial parasite but were having episodic fever with chills and no local symptoms like cough, sore throat, runny nose, burning micturition and loose motions etc. were labelled as “slide negative but responded to anti-malarial drugs”. c) Respiratory tract infections included patients with signs and symptoms of rhinitis, tonsillitis, pharyngitis, ear discharge, sinusitis, having bilateral wheeze or bronchial breathing on auscultations were included in this list. This group also included two patients of Lobar Pneumonia (on chest X-Ray). d) Patients having

history of loose motions and having liquid consistency, pus cells, RBCs, parasites like giardia or entamoeba on stool Routine Examination were included in gastroenteritis group. e) Patients with history of flank pain, burning micturition and having pus cells on urine routine examination were included in UTI group. f) Patients with high titer on Widal (O or H agglutinin titer >200) were included labelled as Typhoid fever. g) Patients with eyelids infections (stye), tooth/gum infections, wounds and skin infections (boil) were labelled as others.

Patients with fever and no focal symptoms and malarial parasite slide negative were referred to medical specialist. All these patients remained admitted in hospital until their fever settled down and their symptoms improved.

RESULTS

Of total 865 patients 507 (58.61%) came out to be malarial parasite slide positive. Of these 507 cases of malaria 403 (79.49%) were due to *Plasmodium vivax* infection, 71 (14.00%) were due to *Plasmodium falciparum* infection and the rest 33 (6.51%) were due to mixed infections, i.e., both *vivax* and *falciparum* infections.

In respiratory tract infections group, there were 73 (8.44%) patients. This group also included two patients of lobar pneumonia who were diagnosed on chest X-ray PA view. Twenty one (2.43%) patients were diagnosed as cases of gastro enteritis, 17 (1.97%) were having urinary tract infections, 24 (2.77%) of the total 865 patients who were having fever but no localized symptoms like, cough, burning micturition, loose motions, shivering, periodic fever etc. were referred to medical specialist. Seventeen (1.97%) were grouped as others which included mostly wounds and skin infections. Twenty (2.31%) were diagnosed as cases of typhoid fever.

DISCUSSION

Fever or pyrexia[12] is defined as an increase in body temperature above the normal range of 98–100ºF (36.5–37.5ºC) due to an elevation in the body temperature regulatory set point[13]. Normal temperature has been found to have a wide range.[14] Fever is usually accompanied by lethargy, sleepiness, anorexia, depression, inability to concentrate and hyperalgesia.[15–17] Fever is a sign of many medical conditions like, malaria, respiratory tract infections, viral and bacterial gastro enteritis, bone and skin infections, and urinary tract infections etc.

In our study malaria was the most common diagnosis with *Plasmodium vivax* being predominant. Malaria diagnosis was made on microscopy using both thick and thin slides. The true number may be more than this as a large number of patients who were negative for malarial parasite, responded to anti-malarial therapy. It is because sometimes the person has malaria and the slide will not show the parasite. It may be because either the microscope or stain used was not good or it can be because of the inexperienced microscopist. However, more often it is because the very low number of malarial parasites in the section of the blood that had been examined. In our study, the microscope used was new, stains were fresh and microscopy was done by expert technician who were trained in military hospitals.

Comparing our results regarding species distribution of malaria and symptomatology to those of studies by Khan et al in D. I. Khan[18] and Hozhabri *et al* in Jhangara Sindh[19], our results are dissimilar. The prevalence of slide positive malaria in febrile patients was 58.61% in our study as compared to 20% in Khan et al study and 5.9% in Hozhabri study. In our study the prevalence of *Plasmodium vivax* was 79.49%, *falciparum* 14.00% and mixed malaria 6.51% whereas in H U Khan et al study *vivax* infection was 40.81%, *falciparum* infection 58.17% and in Hozhabri *et al* study *vivax* infection was 35% and *falciparum* infection 65%. The reason behind may be geographical differences and the selection of patient group, as all our patients were soldiers who performed duties in open on posts. So they were more exposed to the mosquitoes.

In a study by Sheikh et al in Quetta, the prevalence of malaria in febrile patients was 34.85%.[20] In that study the prevalence of *vivax* infection was 66.87% and *falciparum* infection 30.72%. It is similar to our study in that *vivax* infection is more prevalent than *falciparum* infection.

Widal test was used for typhoid fever. O and H agglutinin titer of >1/200 are of diagnostic significance.[21] Rest of the diseases (i.e., other than malaria) were diagnosed by clinical presentation, physical examination and routine laboratory investigations. Those patients with no focal signs and symptoms, malarial parasite slide negative who did not respond to chloroquine, were referred to medical specialist. Most of the referred patients were treated with a combination of injection artemether and injection ceftriaxone by medical specialist to which they responded.

Another study to find out causes of fever in adults on Thai-Myanmar border was carried out by Ellis *et al*.[22] In that study too, the most common cause was malaria, i.e., 25.3% among febrile patients. Also included in the list were respiratory tract infections (upper+lower tract) 19.7%, gastro enteritis 2.6%, urinary tract infection 2.1%, typhoid fever 0.8%, other 2.8% etc. In this study too respiratory tract infections, gastro enteritis and urinary tract infections were diagnosed on clinical bases. In the

study by Ellis *et al*, they were able to find out a number of specific etiological agents as compared to our study. Reason behind may be different geographical conditions and the availability of much better and advanced diagnostic tools in their set up.

CONCLUSION

The knowledge of local pattern and etiological causes of febrile illness in developing countries provide benefits to both local community and health care providers. There is a need to adopt clinical strategies and policies to different setting. Based on available health care resources and sound evidence, each area should develop its own guidelines. However, in an area with high malaria prevalence, it would be dangerous to rely too much on diagnostic tests. Both reasoning and clinical examination are necessary to differentiate other causes of febrile illness such as benign viral infection or potential dangerous conditions from malaria.

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AUTHOR'S CONTRIBUTION

SAA conceived the idea and planned the study and wrote the initial drafting. J and AH worked with data collection. SAM and HR contributed in analysing the data. SA made the final drafting and formatting.

Conflict of interest: None

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