

PRESCRIPTION PATTERNS OF GENERAL PRACTITIONERS IN THE TREATMENT OF TYPHOID FEVER IN RAWALPINDI AND ISLAMABAD

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ABSTRACT

Objective: To analyze the prescription patterns of general practitioners for the treatment of typhoid fever, identifying the gaps in treatment and recommendations for change of practice by general practitioners (GP's).

Study Design: Descriptive cross sectional study.

Place and Duration of Study: Different regions of Rawalpindi & Islamabad, from Sep to Nov 2011.

Methodology: Convenient Sampling was done and one hundred GP's (n=100) were selected. We visited their clinics for private practise and got consent to fill questionnaires. Those who answered questionnaire and fulfilled the eligibility criteria were finally selected as study participants. Practitioners were selected irrespective of age, sex, ethnicity and locations within twin cities of Rawalpindi and Islamabad.

Results: The prescription patterns revealed 55% GP's recommend quinolone's, 40% GP's 3rd generation cephalosporins, 2% GP's chloramphenicol, 1% GP's ampicillin / cotrimoxazole and 2% GP's prescribe other than these drugs. Forty one percent GP's recommended antibiotics for 14 days, 36% GP's advise for 10 days, 15% GP's recommend for 7 days, 7% GP's for 5 days and only 1% GP's prescribed antibiotics for 3 days. Sixty two percent GP's were of opinion that effective order of drugs in the treatment of typhoid fever is quinolones, 3rd generation cephalosporin and ampicillin while 3rd generation cephalosporins, quinolones, azithromycin, ampicillin and chloramphenicol is effective order in view of 32% GP's. For relapse / recrudescence of typhoid fever, 50% GP's prefer 3rd generation cephalosporins, 29% prescribed quinolones, 8% advise azithromycin / nalidixic acid, 6% recommended chloramphenicol and 3% prescribed ampicillin / cotrimoxazole.

Conclusion: Inappropriate prescription patterns of GPs in the treatment of typhoid fever constitutes a major public health problem. As knowledge of GP's is not uniformly updated, very few of the GPs give proper advice regarding preventive / remedial measures. Another omission is non notification of the disease to Public Health Authorities.

Keywords: General Practitioners, Typhoid Fever, Prescription, Recrudescence.

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INTRODUCTION

Enteric fever remains a major public health problem, causing enormous morbidity and mortality in developing countries, resulting from infection with *Salmonella* species. The disease is unique to humans characterized by malaise, fever, abdominal discomfort, transient rash, splenomegaly and leucopenia. The most important complications are intestinal ulceration, hemorrhage and perforation¹.

According to WHO, approximately 500,000 deaths are reported each year globally². Typhoid fever is the sixth most common cause of death in

Pakistan and its prevalence in our country is estimated to be 412 cases per 100,000 population per year^{3,4}. It affects more commonly women and children.

In one study typhoid fever affected 54.64% females, 13.4% pediatric population and its overall incidence in age group of 13-40 years was 74.23%⁵. In addition to many other factors, quite significant proportion of the cases of typhoid fever with delayed recovery and complication are attributable to the lack of knowledge and casual attitude of general practitioners (GPs) in our society. Antimicrobial resistance continues to emerge in *S.typhi* and *S.paratyphi*, resulting in loss of time of traditional first-line drugs and fluoroquinolones. Decreased ciprofloxacin

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susceptibility and, more recently, fluoroquinolone resistance have led to greater use of third-generation cephalosporins. Azithromycin shows some promise for the management of uncomplicated typhoid fever and provides a useful alternative to ceftriaxone for settings where a cheaper oral regimen is needed. To reduce gaps in the current understanding of typhoid fever incidence, complications, and case-fatality rate, large population-based studies using blood culture confirmation of cases are needed in representative sites, especially in low and medium human development index countries in Asia. Inappropriate prescription constitutes a major public health problem of increasing concern. Keeping in view of this scenario a study was planned which aimed at determining the prescription patterns of treatment of typhoid fever at the level of general practitioners in the Rawalpindi and Islamabad area.

To find out prescription patterns of general practitioners in the treatment of typhoid fever, identifying the gaps in the treatment and recommendations for change of practice.

MATERIAL AND METHODS

This Descriptive cross sectional study was conducted among GPs having experience ranging from 2 years to 42 years in different regions of Rawalpindi and Islamabad from September 2011 to November 2011 using non-probability convenience sampling. After convenient sampling 100 GPs were selected. We visited their private practising clinics and got verbal permission to fill questionnaires. Those who fulfilled the eligibility criteria and agreed to the questionnaire were finally selected as study participants. GPs were selected irrespective of age, sex, ethnicity and working in the different locations within twin cities of Rawalpindi and Islamabad. All quacks, homeopaths, hakeems, traditional health workers and those doctors who did not give consent were excluded. A detailed, pre-tested and structured questionnaire containing open and closed ended questions with demographic profile of the subjects were used to

collect the data. The contents and design of the structure of questionnaire was based on existing current literature, risk factors, symptoms and signs, diagnostic modalities, treatment of typhoid fever and its complications. This questionnaire was given to the GPs after complete assurance of anonymity and secrecy. Data were entered and analysed using SPSS version 17.0. Descriptive statistics of data was calculated in terms of frequencies and percentages of qualitative variables, mean or standard deviation of quantitative variables.

RESULTS

Average age of participating GPs was 45.53 years + 10.96 with age range of 25 years to 75 years. 83% were males while 17% were females with male to female ratio of 4.9:1. Work

Table: Prescription pattern of antibiotics after confirmation of typhoid fever (n=100).

S. No.	Prescription	GPs
1	Quinolones	55%
2	3rd generation cephalosporin	40%
3	Chloramphenicol	02%
4	Ampicillin / co-trimoxazole	01%
5	Other drugs	01%

experience ranged from 2 years to 42 years with median of 19 years (Inter-quartile range: 10-26 years). Eighty percent doctors were practicing in Rawalpindi while 20% were practicing in Islamabad.

Half (50%) of the GP's used widal test and blood culture for confirmation of the typhoid followed by 32% GP's who confirmed typhoid through typhidot while 11% GP's used TLC and Widal test and only 7% GP's used blood culture and bone marrow culture for the confirmation of typhoid.

On diagnosis of typhoid fever, majority (55%) of the GP's prescribe quinolones followed by 3rd generation cephalosporins by 40% GP's, chloramphenicol by 2% GP's and ampicillin/ cotrimoxazole by 1%GP's while 2% GP's prescribe other than these drugs (table).

According to 62%GP's effective order of preference of drugs was quinolones, 3rd gene-

ration cephalosporin and ampicillin while 3rd generation cephalosporins, quinolones, azithromycin, ampicillin and chloramphenicol was effective order answered by 32% GP's.

Seventy percent GP's mentioned that resistance of quinolones was rising in Pakistan, 13% mentioned quinolones, ceftriaxone and chloramphenicol (all three is rising) while 12% mentioned chloramphenicol resistance was rising.

Majority 41% of the GP's prescribed antibiotics for 14 days followed by for 10 days by 36%, for 7 days by 15% GP's, for 5 days by 7% GP's and for 3 days by only 1% GP.

For relapse / recrudescence of typhoid fever, 50% GP's preferred 3rd generation cephalosporins, 29% preferred quinolones, 8% preferred azithromycin / nalidixic acid, 6% preferred chloramphenicol and 3% preferred ampicillin / cotrimoxazole.

Ninty five percent GP's thought that carrier state existed in typhoid fever and 4% GP's thought that it did not exist while 1% GP didn't comment about carrier existence.

For treatment of typhoid carrier, 32% GP's were of opinion that there was no treatment of carrier, 23% GP's prescribed cephalosporin, 22% advised cholecystectomy 16% prescribe ampicillin while 2% GP's didnot know about treatment of carrier (figure).

As a preventive measure for typhoid fever, 76% GP's recommended vaccination, hand washing, safe excreta disposal and boiled water, 17% GP's recommended hand washing, safe excreta disposal,boiled water and 4% GP's vaccination, hand washing and boiled water while 3% of GP's recommended only vaccination.

As prescription of vaccine, 79% GP's prescribed typhirex followed by vivotif by 14% GP's while 7% GP's were of opinion that vaccination was not needed for typhoid fever.

DISCUSSION

Typhoid fever is a systemic bacterial infection caused by salmonella species, which is an important cause of febrile illness in crowded

and impoverished populations with inadequate sanitation that are exposed to unsafe water and food that pose a risk to travelers visiting countries of endemicity⁶. It is usually acquired through ingestion of water or food contaminated by urine or feces of infected carriers, as such, in a common illness in areas where sanitation is poor. One of the most famous carrier was Typhoid Marry, a cook who infected atleast 51 people⁷. General Practitioners make the back bone of health care system in the country with vast majority of patients landing up with them and

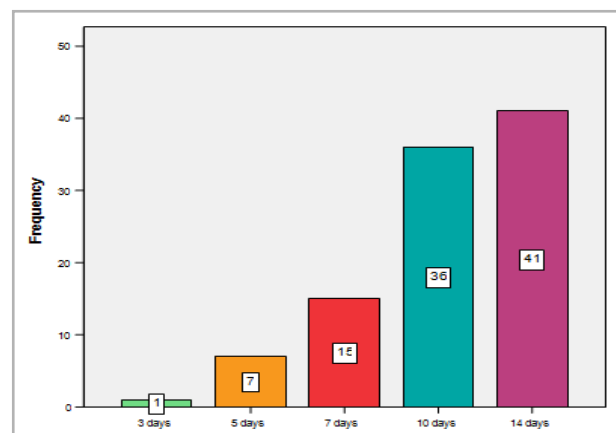


Figure: Duration of treatment.

generally looking for specialist care only in the event of some complication of their medical or surgical illness.

A prescription provides an insight into a prescriber's attitude of the disease being treated and the nature of the healthcare delivery system in the community⁸.

Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community⁹.

It has been shown in this study that choice of appropriate antibiotic and preventive measures (vaccine) is largely individual dependent in our country than evidence based. The correct rationale behind prescription of appropriate drugs can be adopted from different research

studies conducted worldwide. Some of these studies have been reproduced here.

In 2016, a retrospective study was conducted in India to study indoor treatment options of typhoid fever and it had shown that most commonly prescribed antimicrobials were 3rd generation cephalosporins and fluoroquinolones. 43.30% patients received more than one antibiotic. Antimalarials chloroquine, artemisinin derivatives and metronidazole were other drugs prescribed to enteric fever patients concurrently for associated clinical conditions.

In 2015, a study was conducted in Bangladesh to know antibiotic susceptibility pattern in children that showed, approximately 15% of *S. Typhi* isolates were multi drug resistant and that resistance to nalidixic acid and decreased susceptibility to ciprofloxacin are now common in Dhaka, including in the youngest children, suggest that options for antimicrobial therapy are becoming limited, and should be viewed as a strong reason to support typhoid control and vaccination programs¹⁰⁻¹⁸.

The results of above studies remain close to our results as far as the preference of General Practitioners in our set up is concerned for the treatment of resistant typhoid fever.

The study was conducted in the twin city of Rawalpindi and Islamabad, with a fairly large number of doctors participating in the study. It is quite clear that the general practitioners of our country are not following any unified drug prescribing policy while dealing with patients of typhoid fever. It is further emphasized that basic knowledge including definition of a case and carrier of typhoid fever, choice of appropriate antibiotic, duration of treatment and preventive measures (vaccines) also needs to be imparted to them. The review of existing literature in this regard further emphasizes that exact burden of disease and its complications also need to be estimated with deliberate efforts. This will help utilizing the country resources rightly and guidelines for inappropriate prescriptions of

general practitioners in the treatment of typhoid fever.

CONCLUSION

Typhoid fever is one of the major community problems. Inappropriate prescription patterns of GPs in the treatment of typhoid fever constitutes a major public health problem. As knowledge of GP's is not uniformly updated, very few of the GPs give proper advice regarding preventive/remedial measures. Another omission is non notification of the disease to Public Health Authorities.

RECOMMENDATIONS

Regulatory and non-regulatory interventions directed at providers as well as consumers, need to be implemented to improve the prescription patterns as per international standards & locally developed guidelines.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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