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THE PRESCRIBING TREND OF ANTIBIOTICS FOR SORE THROAT, TONSILLITIS AND PHARYNGITIS IN CHILDREN

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ABSTRACT

Sore throat, tonsillitis and pharyngitis are the common problems in children. The objective of study was to evaluate the current prescribing trend of various antibiotics in mentioned clinical conditions. A multicenter comparative study was conducted in general setting clinics situated in various populous areas of Karachi to eliminate socio-economic factor. A total of twenty clinics were visited and from each center fifteen patients (N= 300) were selected. New born and infants were excluded and only children of age group between 2 to 12 years having complain of throat infections were included. Different in vivo symptoms (fever, soreness, headaches/body aches, chest/nasal congestion, cough/flu/sneezing and presence of tonsillar exudate) of the patients were also determined. Results showed that the combination of amoxicillin + clavulanic acid is considered to be the most effective and safe therapeutic agent against various throat infections hence it has been highly prescribed (69.05%) in general setting of practice. It is concluded that different brands of the amoxicillin + clavulanic acid combination is medically administered as a first line treatment in children to treat tonsillitis in majority of the cases. However in case of pharyngitis cefradine and cefixime are the choice of treatment.

Key-words: Antibiotics, Tonsillitis, Pharyngitis, Sore throat, prescribing trend

INTRODUCTION

Upper respiratory infections (URTI) are the commonest among infections in children.. It is most commonly caused by variety of viruses (rhinovirus, coronavirus, adenovirus, para-influenza, respiratory syncytial virus and others). URTI or common cold is seen not only in children but also in adults and considered to be a one of the major cause of morbidity. Beside the fact that these infections are not life threatening but still require an appropriate selection of chemotherapeutic agent(s) or any other supplemental treatment (Cotton, 2008); (Hugo and Russell, 1998); (Tripathi, 1994). About 20% of sore throats are caused by bacteria, however, this situation becomes more complicated in the presence of virus and need proper diagnosis and medication. URTI made a connection with lower respiratory tract infections (LRTI) which is more frequently concomitant with bacterial infections. Antibiotics are frequently prescribed despite of predominant viral involvement (Dollman *et al.*, 2005); (Kho *et al.*, 2013). Antibiotics are prescribed on an average of 40% to children however this practice is substantially vary between different doctors (Mohan *et al.*, 2004; Pavesio *et al.*, 1988).

The objective of the current study is to evaluate the prescribing pattern of antibiotics in children at various clinical setting of Karachi in throat infections.

MATERIALS AND METHODS

A multicenter, comparative study was made in twenty general setting clinics of Karachi to evaluate the antibiotics' prescribing trend in sore throat, tonsillitis and pharyngitis. The study was conducted from the month of June 2016 to August 2016 by selecting well developed twenty general clinics with pharmacy stores and at least a patients turnover of 100/day. These centers were randomly visited from diverse areas of Karachi to eliminate the biasness of financial and racial factors. Data were collected to assess patients' conditions, symptoms, severity and the prescribing treatment for the complains. A total 300 individuals were selected from 20 clinics (fifteen patients per setting on first come basis). Newborns and infants were excluded while only children of age group between 2 to 12 years were included in the study.

RESULTS

Results showed that the throat infections were more dominant in male children than female children. The most sensitive and critical age of throat infection was found to between 3 to 6 years. Demographic information of the children is given in Table 1. Patients were more suffering in throat infections due to tonsillitis in comparison to pharyngitis. Pharyngitis was seen in mature children of age above six years. It was also found that the frequency of upper respiratory tract infections was higher in the patients belong to the middle financial class (30.33%) followed by lower middle class (25.33%). The major complains of tonsillitis and pharyngitis (Table 2) were low/high grade fever (98%), body ache (49.66%), flu/sneezing (37%) and vomiting (23.33%). The treatment protocol was different in both inflammations like combination of amoxicillin + clavulanic acid was successfully used to treat the inflammation of tonsils in all clinical settings (Table 3). While cefradine was given as a first line therapy to overcome pharyngitis as shown in Table 4. Intravenous route of administration (i.v) was usually avoided except in severe conditions. No case of i.v drug administration was noticed in treatment of tonsillitis. However, in severe inflammation of pharynx with high grade fever ceftriaxone i.v. was prescribed to reverse the symptoms immediately. The provided treatment regimen for both problems was almost similar in all general care units.

Table 1. Demographic Information of the patients (N= 300).

	Gender	**%**
Male	189	63.0
Female	111	37.0
Age Groups (Years)		
3-6	156	52.0
7-9	95	31.66
10-12	49	16.33
Socio-economical Status		
Lower class	76	25.33
Lower-middle Class	88	29.33
Middle Class	91	30.33
Upper Class	45	15.0

Table 2. Symptoms of Throat Infections.

Symptoms	**Positive**	**Percentage***
Fever	294	98.0
Cough/Flu/Sneezing	111	37.0
Chest/Nasal Congestion	53	17.66
Headaches/Body aches	149	49.66
Vomiting/ Difficulty in swallowing	67	22.33
Otitis media	33	11.0
Tonsillar exudate	45	15.0

*Multi symptoms marking were made in Patients

Table 3. Prescribing Antibiotics for treatment of tonsillitis.

Antibiotic	**Number of Patients (N= 223)**	**Percentage (%)**
Amoxicillin + clavulanic acid	154	69.05
Amoxicillin	19	8.5
Macrolides (clarithromycin / azithromycin)	36	16.14
Cefixime	14	6.27

Table 4. Prescribing Antibiotics for Treatment of Pharyngitis.

Antibiotic	Number of Patients (N= 77)	Percentage (%)
Amoxicillin + clavulanic acid	18	23.37
Cefixime	21	27.27
Cefradine	22	28.57
Cefaclor	10	12.98
Ceftriaxone (i.v)	6	7.79

DISCUSSION

Sore throat, tonsillitis and pharyngitis are common throat infections seen among children. Mostly viruses are the causative agent for the mentioned underlying conditions that are self-limiting. Recurrent respiratory tract infection (RRTI) is of major health concern especially in children. Majority of times the nature of infection was viral but unfortunately it was seen that even in such conditions the antibiotic courses were prescribed to prevent onset of secondary infections. However this higher consumption of antibiotics would be surely result in mounting bacterial resistance (Abdullah *et al*., 2012). Bacteria is also a significant etiological factor that need to be identify properly to subside the local symptoms and successful treatment. Clinical *Streptococcus pyogenes* [GROUP A *streptococcus*] (GAS) is a most common causative bacteria for throat problems. If the organisms left untreated it might be responsible for suppurative (tonsillar abscess) and non suppurative (rheumatic fever) complications (Robertson *et al.,* 2005; DelMar *et al.,* 2006; DelMar *et al.,* 2000). Clinical manifestation of tonsillitis and pharyngitis include fever, sore throat (Gerber *et al*., 1985; Kaplan *et al.,* 1999), red pharynx (Hayward *et al.,* 2009), enlarged tonsils with/without exudates (Stelter, 2014).

In the present study the prevalence and the treatment of two major pathologies of throat in children was also investigated. It was found that tonsillitis was more prevalent than pharyngitis in children especially under age 8 years. About 77 children were came to clinics due to complain of pharyngitis while rest were in the grip of tonsillitis. The clinical symptoms of both inflammatory conditions were more or less common but more severe in infections of pharynx. Different antibiotic liquid preparations (syrup/suspension) were used to treat all the patients. The major route of drug administration was oral however; in 3 pharyngitis children, physicians directly prescribed intravenous (i.v) antibiotic (ceftriaxone). While the care taker of four children told that the patients were already on the oral antibiotic that was not responding and not decreasing the fever and other clinical signs of pharyngitis. In such instance, practitioners had replaced the therapeutic agent with the highly effective i.v. ceftriaxone. It was also observed that physician's at various settings have selected ceftriaxone i.v formulation for the successful treatment of the pharyngitis. Mostly i.v formulations were not common in mild to moderate infections in children. The dose of oral and i.v antibiotic was calculated on the basis of children' age, weight and severity of illness. Effectiveness of the drug was also proven in past, a study was conducted on 60 children having pharyngotonsillitis with scarlet fever. 50mg/kg of ceftriaxone (stat) was given for 3 consecutive days. Results revealed that 100% clinical cure was obtained with drug in children (Bisno, 2001; Pavesio *et al.,* 1988).

The symptoms of tonsillitis and pharyngitis were identical including low/high grade fever, cough and flu. The intensity of high grade fever and difficulty in swallowing were mainly observed in pharyngitis. All prescriptions were based on poly pharmacy (more than one drug). Physicians usually prescribed antibiotic along with any anti pyretic/analgesic agent, anti-allergy formulation and cough suppressant (if cough was complain) for symptomatic treatment for 5-7 days depending on severity. One of the most significant finding of the study was, physicians have selected the antibiotics on their previous experiences without any clinical/laboratory testing. Combination of clavulanic acid + amoxicillin was highly prescribed in tonsillitis (69.05%). This drug is considered to be most valuable therapeutic agent with high cure rate. High consumption and effectiveness of the combination has been intensively documented in the literature (Theodoridou and Hadjichristodoulou, 2011; Mohan *et al.,* 2004; Panagakou *et al.,* 1988; Pickering *et al.,* 2006; Robertson *et al.,* 2005). Current findings are also supported by another study including twenty pediatric patients with diagnosed bacterial upper respiratory tract infections (URTIs) from different infectious sites. Complete bacterial eradication was found in 90% of the cases treated with the amoxicillin-clavulanic acid, reflecting remarkable inventive efficacy of the combination. The official treatment guidelines in various regions of the world for tonsillitis/pharyngitis also confirms the higher abolishing effects on bacterial organisms upon treatment with the amoxicillin –clavulanic acid (Boccazzi *et al*., 1988). Moreover various brands of the same antibiotic were given considering the socio-economic ground of child's family. Along with efficacy of drug its route of administration, dosing frequency are also considered as important factors.

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