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ASSESMENT OF ANTIBIOTIC UTILIZATION ON PAEDIATRIC PATIENTS WITH UPPER RESPIRATORY TRACT INFECTION AT PUBLIC HEALTH CENTRES , GUNUNG KIDUL PERIOD OF JANUARY – JUNE 2007

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Abstract

The study about the use of antibiotics on paediatric patients with upper respiratory tract infections (URTI) has been carried out at Public Health Centres (PHC), Gunung Kidul during January – June 2007. This research was aimed to know the use of antibiotics on paediatric patients and the antibiotics rationality, which held in Public Health Centres Gunung Kidul Yogyakarta. The study was a descriptive study with retrospective data collecting. We used all outpatient prescriptions of paediatric (2-12 years old) patients who diagnosed as URTI. The antibiotics rationality was analyzed based on the analysis of right indication, type of drug, patient, and dosage. We found 1008 prescription in paediatrics with URTI at four Public Health Centres at the rural area of Gunung Kidul. Amoxicillin was the most prescribed antibiotic in the URTI (mean = 41.8%). Common cold was the most URTI experienced by paediatric patients. The average of rationality among four PHC was 30.3%. The used of antibiotics in children with URTI in Gunung Kidul was high, but the rationality of the antibiotics used is still need to be evaluated, principally with the right indication of antibiotic

Key word : *Antibiotic, Paediatric, Upper Respiratory Tract Infection, Public Health Centre.*

Introduction

Respiratory infections are the main reason for antibiotic prescriptions in the paediatric population. According to the 1992 National Ambulatory Medical Care Survey (NAMCS) in the United States, acute otitis media (AOM) was the most common diagnosis for which antibiotics were prescribed (30%), followed by upper respiratory infection (URTI), pharyngitis and bronchitis (12%, 10% and 9%, respectively). In a study by Nyquist et al (1998),

44% of children diagnosed with the common cold and 46% of children diagnosed with URTI received antibiotics. A recently published Dutch study showed high (46%) rates of antibiotic prescribing for patients with respiratory diagnosis, especially in children 0–5 years old. (Akkerman et al, 2004; Razon et al, 2005)

Inappropriate prescription of antibiotics can lead to the evolution of bacterial resistance, mainly by selective pressure, an increase in

adverse drug effects and an increased financial burden (Razon et al, 2005). The URTI was suffered by children in the developing country and in developed countries and it was still being the important health problem because of causing the death of the baby and pre-schoolers, that is approximately 1 from 4 deaths that happened. Each child it was estimated experienced 3-6 episodes of the URTI each year. The visit in the community health centre because of the acute respiratory tract infection reached 40% to 60%. From all over, the death that was caused by the acute respiratory tract infection included 20%-30% (Rasmaliah, 2004).

Although URTIs are mild, selflimited, and of short duration, they are a leading cause of acute morbidity and industrial and school absenteeism. Despite extensive research efforts, few successful treatments have been identified for URIs. Because of the viral cause of URIs, antibiotics are not an indicated treatment. Yet physicians continue to prescribe these drugs for apparently viral URIs. A recent study in the United States showed that 60% of cases of acute nasopharyngitis (common cold) were treated with antibiotics (Mainous and Hueston, 1998).

Antibiotic resistance has become a global problem, with resistance among *Streptococcus pneumoniae*, among others, a major focus of concern. The association of antibiotic use and overuse with development of resistance and reversal of resistance patterns with decreased use has been previously demonstrated. Respiratory tract infections including otitis media are clearly the leading indication for outpatient antibiotic prescriptions. Numerous studies have shown that a substantial number of prescriptions for antibiotics are provided in cases in which antibiotic use has unproven benefit, such as for upper respiratory tract infections (URTIs), the common cold, bronchitis, and bronchiolitis (Gaur et al, 2005)

The aim of these study was knowing the use of antibiotics on URTI paediatric patients and the antibiotics rationality, which was held at Public Health Centres of Gunung Kidul Yogyakarta

Patients and Method

We performed a descriptive research. We used the prescriptions of paediatric patients with URTI which was recorded in the patients' medical record during January-June 2007. The inclusion criteria for patients were children with URTI, 2-12 years old, and diagnoses code was from J00 to J06 at Public Health Centres during January – June 2007. The use of antibiotics was analyzed, including the appropriate indication, type of drug, patient, and dosage. Other information was obtained from interview with the physician and official staffs of public health centres.

Data Analysis

Patients demographics' data will be presented as percentage number. The rationality of antibiotic use was including the right indication, right drug, right patient and right dosage, also in percentage number. The right indication, type of drug, patient and dosage were calculated by comparing those level of rationalities to the total number of patients. The percentage of antibiotics which were used in paediatric patients are calculated by comparing the number of patients using antibiotics to the total number of patients.

Result and Discussion

We took four Public Health Centres at the rural area of Gunung Kidul with 1008 URTI perscriptions in paediatrics. The distribution of prescription among four Public Health Centres (PHC) in male and female children was presented in figure 1. The prescription number at PHC 3 (n=448) was the highest number of

prescription, because the location of the PHC 3 was near with the city area of Gunung Kidul, otherwise the other PHCs were located far from the city area. The percentage of male paediatric patients is higher than the female ones in PHC 1,3 and 4. This study was consistent with previous study, which was done by Huan et al (2005) in Taiwan.

The distribution of URTI diagnoses and antibiotics used at four Public health Centres in Gunung Kidul was presented in figure 2 and figure 3. Principally common cold was the most problem which was experienced by paediatrics. However the other diagnose of URTI got the second problem of URTI. This study has suggested that in primary care prescribing for specific URTI that are more likely to be caused by a viral infection has substantially low ("acute sore throat" (tonsillitis, pharyngitis). This has been associated with an increase in prescribing for non-specific upper respiratory tract infections and more recently increase in prescriptions for children with "common cold signs or symptoms". This high rate of prescribing for these non-specific diagnostic groups was responsible for the increase in total prescribing towards the end of the study. It is possible that general practitioners (GPs), in response to ever more guidelines suggesting reducing prescribing for specific upper respiratory tract diagnoses, have shifted their prescribing to diagnoses where there is less formal guidance. This is happening despite recent data suggesting that the great majority of children with non-specific 'upper respiratory tract infection symptoms have an underlying viral cause for their illness.

Amoxycillin was the most prescribed antibiotic in the URTI (mean = 41.8%). This study also consistent with previous study that amoxycillin and cephalosporine generations were the most prescribed antibiotics in URTI (Mainous and Hueston, 1998). Generally, the use of antibiotics in URTI was very high. The mechanisms driving high antibiotic prescribing

rates among children who attend day care are complex. Previous study about the antibiotic seeking for URTI found that large proportions of parents believe antibiotics are useful for colds and cough. Parental knowledge about URTIs and antibiotics was the single most consistent predictor of both reported acute care seeking and the misconception that antibiotics would expedite return to day care for 3 specific symptoms (Friedman et al, 2003). Other possibility factors that influence the high antibiotic prescription were the physician behaviour in complying the guideline or following the countinuing education and revised practice guidelines.

The rationality of antibiotic used was presented in table 1. This study demonstrated the inappropriate use of antibiotics based on the right indication, right drug, right patient and right doses. Generally the right indication of antibiotic used was low, except in PHC 4 (100%). This result was supported by the fact that URTI were mostly caused by virus, so the antibiotic prescription should not be given to the patients. The highest rationality was occupied by PHC 4 (55%) and the lowest rationality was occupied by PHC 3 (11.8%), while the average of rationality was 30.3%. PHC 3, which has the most percentage of prescription, has the lowest percentage of rationality, however the PHC 4, with the lowest percentage of prescription has the highest rationality. Considering the location of the PHCs, PHC 4 was the most far location from the city area.

The results suggest a need for a change in physician prescribing behavior. Various interventions, including continuing medical education, practice guidelines, and use profiling, have been used with varying success. First, a guideline on appropriate prescribing for URIs may have use. Unfortunately, adherence to many clinical practice guidelines has been less than optimal.

Table 1. Rationality of antibiotic used at four Public Health Centres in Gunung Kidul, based on the right indication, drug, patient and dosage

Right	PHC 1 (%)	PHC 2 (%)	PHC 3 (%)	PHC 4 (%)
Indication	32.4	31.0	24.6	100
Drug	24.5	31.0	11.8	63.3
Patient	24.5	31.0	11.8	63.3
Dosage	23.9	31.0	11.2	55.0
Rationality	23.9	31.0	11.2	55.0

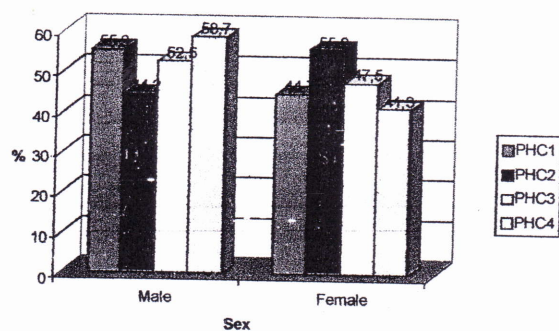


Figure 1. Distribution of male and female children prescription at four Public Health Centres in Gunung Kidul during January to June 2007.

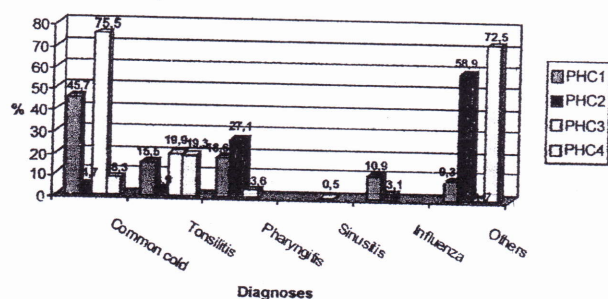


Figure 2. Distribution of URTI diagnoses at four Public Health Centres in Gunung Kidul during January to June 2007.

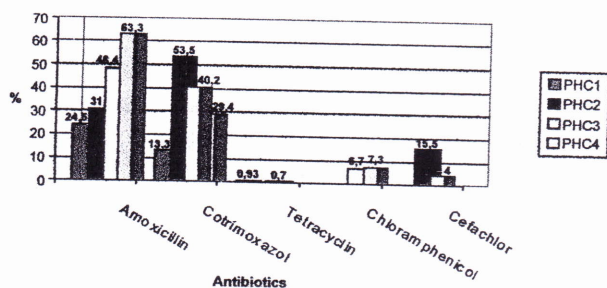


Figure 3. Distribution of antibiotics at four Public Health Centres in Gunung Kidul during January to June 2007.

This study has limitation. We used the retrospective data in patients medical record. Therefore, we can not analyze the appropriate diagnosis classification. The diagnosis could not be objectively evaluated, treatment

decisions were made based on the physician's belief in what the physician thought was wrong.

Conclusion

The study suggest that the used of antibiotics in children with URTI in Gunung Kidul was high, but the rationality of the antibiotics used is still need to be evaluated, principally with the right indication of antibiotics. Result of this study could be confirmed by the prospective data to make sure that the diagnoses of URTI was appropriate

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