A utilization study of antibiotics prescribing in a dental teaching hospital at Yogyakarta, Indonesia

ABSTRACT

題名 A utilization study of antibiotics prescribing in a dental teaching hospital at Yogyakarta, Indonesia

邦題　インドネシア・ジョグジャカルタ市の歯科大学附属病院における抗菌薬の使用実態調査

専攻 (Division) : Life Science

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Antibiotics are commonly used in dental practice and frequently prescribed, also in our country and are most prescribed drugs employed in dental teaching hospital. The study was presented about the utilization of antibiotics and the rational use analysis of antibiotics prescriptions and in dental teaching hospital setting in relation to discourse of developing prescribing guideline.

The present study was designed to investigate and evaluation utilization and the rational use of antibiotics amongst dental outpatients by dental practitioners.

Data collected from outpatients' medical records at Prof Soedomo dental teaching hospital Universitas Gadjah Mada, Yogyakarta, Indonesia during 2011 were used in order to scrutinized and evaluate the antibiotics utilization and rational use.

The most commonly prescribed antibiotic was amoxicillin (78.8%), followed by clindamycin (9.0%) and metronidazole (5.0%). The dental diagnosis most frequently reported was pulp gangrene (26.7%), followed by pulp necrosis (8.8%) and impaction-related problems (6.4%). According to guidelines-1 through -4, the percentages of antibiotic prescriptions that were evaluated as appropriate for the reported diagnosis were 15.1%, 7.2%, 7.5%, and 16.3%, respectively.

The basis of these findings there should be developed guideline to minimize inappropriate antibiotics prescribing. And the study presents an important research provides a benefit of the advancement of dentistry and improves the quality of patient outcomes.

Background. Antibiotics are one of the most common drugs prescribed in hospital presently. It has been estimated up to a third of all patients received at least one antibiotic during treatment in hospital. In the past decade antibiotics are prescribed by dental practitioners regularly to treat and for the management of a number of oral and dental infections. Antibiotics are commonly used in dental practice as an aspect of pharmacotherapy with the particularity of affording both etiological and curative actions. Indication and clinical situation that require systemic antibiotics in dentistry are very limited since most dental diseases are managed by operative intervention. As worldwide, antibiotics are frequently prescribed also in our country and are most prescribed drugs employed in dental teaching hospital. This type of antibiotics usage may lead to the inappropriateness. Appropriate and correct prescribe of antibiotics is essential to ensure that effective and safe treatment is available and that practices that may enhance bacterial resistance are avoided. The study was presented about the utilization of antibiotics prescribing practitioners in dental teaching hospital setting.

Objectives.. The study was designed to investigate and evaluation the use of antibiotics amongst dental outpatients by dental practitioners in dental teaching hospital at Yogyakarta city, Indonesia. The present study was an investigation and evaluation studies on antibiotic prescribing in the dental teaching hospital due to the rational using and investigate the antibiotic utilization of outpatients by dental practitioners

Methods. Data from outpatients' medical records was collected in order to identify antibiotics administered during January to December 2011 at Prof Soedomo dental teaching hospital Universitas Gadjah Mada, Yogyakarta, Indonesia retrospectively. Prescription antibiotic-containing from medical record were separated from 14,784 total numbers of medi-

cal records and were scrutinized. Classes and type of antibiotics were recorded and grouped using Anatomical Therapeutic Code and Defined Daily Dose (ATC/ DDD) measurement units were assigned. According to the system, the amount of each antibiotic used in hospital was calculated in grams. The daily amount of each antibiotic was calculated according to the DDD ratio which was defined according to the 2009 ATC index published by World Health Organization (WHO).

The antibiotics appropriateness use was analyzed and compared with recommendations from four international recommended guidelines. All the dental practitioners are working in dental teaching hospital were prescribed antibiotics. A particular prepared format designed for recording all the required relevant general information and information related to antibiotics prescribing patterns was used as a tool for data collection. The anonymous data were numerically coded and entered into statistical package for social science data base and analyzed. Approval for the work was obtained from Ethical Committee Kanazawa University and Universitas Gadjah Mada.

Results. Thirteen different antibiotics were identified and most frequently prescribed is amoxicillin (78.8%) followed by clindamycin (9.0%) and metronidazole (5%). And the most frequently of dental diagnoses reported was pulp gangrene (26.7%) followed by pulp necrosis (8.8%). And among all of antibiotics prescriptions, 79.5% were for generic name. There was a marked increase in the use of antibiotics expressed in defined daily dose (DDD) per 1000 patient visit per month during September to November. It may associate with the seasonal change or the availability of university student as most attendant in dental hospital at the start of academic year.

Dental practitioners prescribed a wide range of antibiotics to treat 121 diagnoses found, and amoxicillin was the most commonly prescribed (78.8%), followed by clindamycin (9.9%) and metronidazole (5%). According to the guideline-1 through -4 the percentage of antibiotics prescription that were evaluated as appropriate for the reported diagnosis were 15.1%, 7.2%, 7.5%, and 16.3% respectively. The finding showed that 0.1% of antibiotics prescribed identified as inappropriate regarding to guideline-2 while 84.0% could not be classified. Only 7.2% of antibiotics prescriptions notes as appropriate use regarding to guideline-2. And regarding to guideline-4, 7.26% antibiotic which prescribed in dental teaching hospital were inappropriate, and 67.8% of antibiotics failed to classify.

Discussion. Amoxicillin was the most frequently prescribed agent (78.8%), even though it is not necessarily suitable for management of routine dental infection. Nevertheless, it is widely used for infection management in dentistry. Clindamycin was the second most prescribed drug (9.9%). It should not be used routinely for treatment for oral infection management, because it is no more effective than penicillin against anaerobes, but it can be used to treat dento-alveolar abscess that has not responded to penicillin or metronidazole, because it is well distributed in soft tissues and bone The results also indicated that the significant inappropriate antibiotics prescribing occurred at dental teaching hospital according to international guidelines. However, the four guidelines failed to list some antibiotics used , and also to list diagnoses in some cases, and were inconsistent in their recommendations, but these findings should be helpful for developing public health policy guidelines to minimize inappropriate antibiotics prescribing at dental teaching hospital. Usually, the inappropriate antibiotics use can be described as a condition where antibiotics are administered

without any signs of certain diagnosis and signs of finding that indicate a clinical and laboratory test results or an infection, and may originate due to administration of antibiotics itself. The results of rational study presented the antibiotics prescribed separated into categorize appropriate, inappropriate, and indeterminate. Inappropriate including unnecessary prescribe of antibiotics without any elucidate indication or diagnosis regarding to the recommended guidelines.

Conclusion. Generally, this study presents an important research which derived from actual data and provides a benefit of the advancement of dentistry and improves the quality of patient outcomes. The use of antibiotics in Prof Soedomo dental teaching hospital was not fully appropriate in terms of rationally prescribing practice. And on the basis of these findings there should be develop guideline and greater internal control to detail monitoring of antibiotics prescribing and further educational and continuing formal training of dental practitioners periodically concerning appropriate prescription of antibiotics in dental teaching hospital.

More of further studies needed to monitor the quality of antibiotics prescribing by dental practitioners in the dental teaching hospital are recommended, together with integrated evaluation to keep optimal of antibiotics usage. Our findings show a level of antibiotics usage and suggested there is a need for educational initiatives and guidelines to promote best practice in dental teaching hospital as academic hospital. Managerial intervention should be considered and further advance studies are required to monitoring and evaluate the antibiotics prescribing.

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学位論文審査報告書（甲）

1．学位論文題目（外国語の場合は和訳を付けること。）

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邦題　インドネシア・ジョグジャカルタ市の歯科大学附属病院における抗菌薬の使用実態調査

2．論文提出者　(1) 所　　属　生命科学　専攻

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3．審査結果の要旨（600～650 字）

インドネシアの歯科医師である申請者は、歯科領域で抗生剤の適応は極めて限定的であるにも拘らず、インドネシアの歯科診療では抗生剤が多用されていることに疑問を抱き、適正使用の推進に役立つ研究を志した。Yogyakarta の Gadjah Mada 大学 Prof Soedomo 教育病院 の協力を得て、2011 年の歯科外来受信者 14,784 名から抗生剤が使用された診療記録 2,024 件を抽出し ATC/DDD により解析した。

その結果、1）アモキシシリンが多用されており、抗生剤処方の 78.8%を占める　2）抗生剤処方の対象疾患は歯髄壊疽、歯髄壊死、歯茎埋状が上位 3 疾患である　3）9 月-11 月にかけて抗生剤の処方が多くなることを見出した。　さらに、抗生剤使用について、世界の主要ガイドライン四種と比較して、4）ガイドラインにより、適正使用、不適正使用、未決疾患の範囲が異なり、使用するガイドラインにより評価が異なること　5）アモキシシリンの歯髄壊疽、歯髄壊死への使用は不適正使用または評価されていないこと　さらに、6）診療者の資格によりガイドラインとの適合性に差があることが明らかにした。これより、インドネシアに適した抗生剤使用ガイドラインの作成が必要であること、アモキシシリンを代表とする抗生剤の使用についてガイドラインに則った使用とする必要があること、などを指摘した。すべてが初の知見であり、今後のインドネシアの抗生剤による歯科診療改善につながる非常に重要な研究成果であり、博士（薬学）に相応しい

4．審査結果　(1) 判　　定（いずれかに○印）○合　格　・　不合格

(2) 授与学位　博　士（　薬学　）