Antimicrobial agents in lower respiratory tract infections in Dutch general practice

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SUMMARY

This study describes the prescription of antimicrobial agents in cases of lower respiratory tract infections in Dutch general practice. A secondary analysis of data from the National Study of Illness and Procedures of The Netherlands Institute of Primary Health Care (a nationwide group of 161 general practitioners with data from 334 449 patients) had been carried out. Antimicrobial agents were prescribed in 30% of all contacts: in about half of the first contacts and contacts for recurrences, and in one out of six repeat contacts. The prescription rates were associated with diagnosis and reason for encounter but rarely with older age or comorbidity. Amoxycillin and doxycycline were most frequently prescribed. While most lower respiratory tract infections are virus-induced and antibiotics are not effective in most cases, antimicrobial agents might still be overprescribed.

Keywords: *antimicrobial agents; respiratory disease; prescribing.*

Introduction

SEVERAL studies have shown that the majority of patients with upper and lower respiratory tract infections do not benefit from antibiotics, and that side-effects are frequent except in risk groups.[1-3] As The Netherlands is known for a restrictive prescription of antibiotics in upper respiratory tract infections,[4] this study aimed to gain an insight into the prescription of antibiotics in lower respiratory tract infection cases in Dutch general practice.

Method

The population (a randomly selected nationwide group of 161 general practitioners [GPs] with 334 449 patients) for this secondary analysis was derived from data from The National Study of Illness and Procedures of The Netherlands Institute of Primary Health Care.[4] The data give a fairly reliable impression of morbidity and interventions in Dutch general practice. All contacts with patients were recorded in terms of reasons for encounter (RFEs), diagnosis (International Classification of Primary Care), comorbidity, and diagnostic and therapeutic procedures. The following data were used for this analysis: patient characteristics, such as age, sex, and comorbidity (diabetes mellitus, asthma/chronic obstructive pulmonary disease [COPD], cardiovascular diseases); contact characteristics, such as first contacts, repeat contacts, and contacts for recurrences; RFEs; diagnosis, such as acute laryngitis/tracheitis, acute bronchi(oli)tis, influenza, pneumonia, other infections of the respiratory tract, and exacerbation of COPD; and prescriptions and referrals. All figures are presented at the level of contact.

Results

About 25 600 contacts of lower respiratory tract infections were registered (Table 1). In about 30% of these contacts an antimicrobial agent was prescribed. The most frequently mentioned RFEs for the first contact were 'cough', 'fever', 'dyspnoea', and 'sore throat' complaints. These accounted for 75% of all contacts. In the repeat contacts, 'medication' and 'physical examination' were the most frequently mentioned RFEs (60%), while 'cough' and 'dyspnoea' represented nearly three-quarters of all RFEs in the contacts for recurrences. The RFEs were related to the diagnosis. For instance, 'cough' was the most frequently mentioned RFE in acute laryngitis, acute bronchi(oli)tis, pneumonia, other infections of the respiratory tract, exacerbations of chronic bronchitis, and COPD, while 'dyspnoea' was the most frequent RFE in exacerbations of asthma/COPD and emphysema.

Antimicrobial agents were prescribed in about half of the first contacts and contacts for recurrences, with the highest percentages prescribed for pneumonia and acute bronchi(oli)tis and in one out of six repeat contacts. The prescription rates were also related to the RFE. Prescription rates were 58% and 45% respectively in contacts with the RFE 'cough' and 'fever', but only 3% for the RFE 'dyspnoea' and 19% for all other RFEs. There were relatively high prescription rates in the first contacts for 'fever' in exacerbations of asthma/COPD, acute bronchi(oli)tis, and pneumonia (three-quarters of the first contacts). There were no differences according to age in any of the diagnostic categories, and there were only small differences because of the presence of comorbidity. Amoxycillin and doxycycline comprised 49% and 35% respectively of the antimicrobial prescriptions written for all patients during the first contact, with the exception of the youngest children, for whom doxycycline and tetracycline were not prescribed. Amoxyxillin-clavunalate, erythromycin, and penicillin were only given to a small minority of the cases. Other antibiotics, such as cefaclor, were hardly prescribed (0.3%). In repeat contacts and contacts for recurrences, amoxycillin and doxycycline were prescribed 75% and 80% of the time respectively. The percentage of amoxycillin-clavulanate was only slightly higher in these contacts than in the first contacts: 6% for repeat contacts and 5% for recurrences.

The referral percentages for first contacts, repeat contacts, and contacts for recurrences were 1%, 3%, and 2% respectively. First contacts for exacerbation of emphysema had the highest referral percentage (8%).

Discussion

In about half of the first contacts and contacts for recurrences antibiotics were prescribed. The rates were related to diagnosis

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Table 1. Total number of contacts (absolutes) and percentages of contacts in which antimicrobial agents are prescribed with regard to diagnosis and nature of contacts.

	First contacts		Repeat contacts		Contacts for recurrences		Total	
	Total	AB	Total	AB	Total	AB	n	%
Acute laryngitis/tracheitis	1114	33	281	36	68	43	1463	34
Acute bronchi(oli)tis	2809	79	3722	38	1170	73	7701	58
Influenza	2501	9	435	12	16	19	2952	10
Pneumonia	582	73	1043	26	26	85	1651	43
Respiratory tract infections	285	34	436	32	40	55	761	34
Exacerbations of chronic bronchitis/bronchoiectasia	68	47	893	15	148	62	1109	23
COPD	62	27	4057	6	248	42	4367	8
Emphysema	38	11	973	6	59	19	1070	7
Asthma	363	42	3576	7	625	34	4564	13
Total	7822	45	15 416	17	2400	56	25 638	30

AB = number of contacts in which antibiotics were prescribed in percentages; COPD = chronic obstructive pulmonary disease.

and RFEs. In acute bronchitis cases, about eight out of ten patients received an antibiotic. Although it is difficult to compare these rates to other countries, a cautious conclusion might be that Dutch GPs do not seem to be so reluctant in prescribing antibiotics in lower respiratory tract infections and especially acute bronchitis as in upper respiratory tract infection cases.[4] They seem to have about the same rates as the United Kingdom and the United States.[5,6]

Age and morbidity were not, or rarely, related to antibiotics prescriptions. This seems to be less rational, because antimicrobial agents might have just as much a beneficial effect in high-risk groups (such as the very young and old).[1,2,7] Macrolides, amoxycillin-clavulanate, and newer antibiotics, such as cephalosporins, were hardly ever used. Such a narrow spectrum is relevant considering the growing problem of microbial resistance.

Most lower respiratory tract infections were treated by the GP, even higher-risk groups such as patients with COPD. This underlines the key position of the GP, just as in the care of upper respiratory tract infections.[4] In this position, GPs could play a major role in preventing the misuse and overuse of antimicrobial agents and so contribute to a solution of the growing problem of increasing multiple-resistant strains.[1,2,8]

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