

Prospective Analysis Of Infectious Diseases Consultations At Turkish University Hospital

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Citation

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Abstract

Background: Infectious diseases consultations are most important part of infectious diseases practice. The aim of this study was to analysis prospectively infectious disease consultations of our hospital that were officially requested during a period of 9 months. **Materials and methods:** In this study, 1315 written consultations that were requested from department of infectious disease and clinical microbiology between November 15, 2004 and August 15, 2005 were investigated prospectively. **Results:** Of the requested consultation cases, 59% (770) were male, 41% (545) were female (range: 15-92 years, mean: 53±18 years). Consultations were routine for 60% (792) and urgent for 40% (523). The departments most frequently requesting the consultation services were Medical Oncology (124, 9.4%), Intensive Care Unit (102, 7.8%), and General Surgery (83, 6.3%). The most frequent reasons of consultation request were fever (507, 38.6%), suspicion of infection (329, 25%), and positive microbiological culture (261, 19.8%). The most frequent purposes were diagnosis and treatment (791, 60.2%), treatment planning (227, 17.3%), and diagnosis (178, 13.5%). Recommendations were as follows: no antibiotic recommendation for 243 patients (18.5%), starting antibiotic therapy for 348 patients (26.5%), changing antibiotic therapy in 320 patients (24.3%), adding antibiotic to the current therapy in 87 patients (6.6%), stopping the current therapy in 107 patients (8.1%), increasing the dose in 9 patients (0.7%), and preoperative prophylaxis for 4 patients (0.3%). **Conclusion:** Infectious diseases consultations are very important for rational antibiotic treatment. Infectious diseases training programs should consist of not only communicable diseases, but also all system infections, antibiotic stewardship, infections in immunocompromised host, nosocomial infections, and differential diagnosis of non-infections causes which was seen frequently. Restericted antibiotic policy should be combined the education programme of antibiotic usage.

INTRODUCTION

Uludag University, Medical School Hospital is a training hospital with 900 beds and consists of reanimation intensive care unit, neurosurgery intensive care unit, general surgery intensive care unit, neurology intensive care unit, cardiovascular surgery intensive care unit, burn unit, department of hematology and oncology, and renal transplantation unit. Infectious disease consultation service is given by all academicians in the department according to the areas of expertise. Consultations are performed by daily visits in the intensive care units. When consultations are requested by other departments, the patient is followed up until the end of the treatment.

The number of consultation services given by the departments of infectious diseases and clinical microbiology

increases day by day. Besides classical infectious diseases, infectious diseases specialists are interested in nosocomial infections and infection control, infections of immunosuppressive patient, and prosthesis infections. Infectious disease specialist has also a responsibility in providing rational antibiotic usage.

The aim of this study was to investigate adult infectious disease consultations prospectively in order to determine the departments that requested consultation services and infection problems, to determine reasons and purposes of requests, to classify consultation recommendations, and to develop a basis for the training of infectious disease and clinical microbiology specialists.

MATERIALS AND METHODS

In this study 1315 consultations that were requested from the Department of Infectious Disease and Clinical Microbiology between November 15, 2004 and August 15, 2005 were investigated prospectively. Patient data were recorded to previously prepared forms. Patient's name, age, gender, name of the department, reason and purpose of the consultation, time of request, state of urgency, microbiological culture requests, antibiotic usage history, reasons of antibiotic use, microbiological culture results, diagnosis of the consultation, and recommendations were recorded. Data were analyzed with SPSS (version 11.5) software package program. According to current regulations in our country certain antibiotics like piperacillin/tazobactam, ticarcillin/clavulanate, cefoperazone/sulbactam, ceftazidime, cefepime, imipenem, meropenem, vancomycin, teicoplanin, caspofungin, amphotericin B lipid complex, liposomal amphotericin B, and voriconazole should be used after the approval of infection disease specialist. Also parenteral forms of some antibiotics like cefotaxime, ceftriaxone, ciprofloxacin, ofloxacin, amphotericin B deoxycholate, fluconazole should be approved by infectious disease specialist after a 72 hours dose.

RESULTS

Of the 1315 patients 59% (770) were male, 41% (545) were female (range: 15-92 years, mean: 53±18 years) and 37% (482) were above the age of 60 years. Consultations were routine for 60% (792) and urgent for 40% (523).

The departments most frequently requesting the consultation services were Medical Oncology (9.4%), Intensive Care Unit (7.8%), and General Surgery (6.3%) (Table1). The most frequent reasons for consultation requests were fever (38.6%), suspected infection (25%), and positive culture results (19.8%) (Figure 1). The most frequent purposes were diagnosis and treatment (60.2%), only treatment planning (17.3%), and only diagnosis (13.5%) (Table2). After consultations 17.8% of patients were diagnosed with lower respiratory tract infection and 10.1% were diagnosed with noninfectious diseases (Table 3). At the time of consultation 60.3% of the patients (793) were already on antibiotic treatment. Recommendations for 793 patients included the following: change in antibiotic therapy in 320 patients, terminate the current therapy in 107 patients, continue with the existing antibiotic therapy in 197 patients, and add new antibiotic to the current therapy in 87 patients (Table 4). Distribution of 243 patients who were not recommended antibiotics in table 5.

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DISCUSSION

Infectious disease specialists play a major role in providing the rational antibiotic therapy. In previous studies, it was observed that the length of hospital stay, antibiotic usage, and total cost were reduced with infectious disease consultation ¹. Ozsut et al.², investigated a total of 2479 infectious disease consultation services that were performed in 10 months. Of 2479 consultations, 372 were requested during working hours and 157 were requested off-hours, 529 were written consultation and 1950 were by telephone. The departments most frequently requesting the consultation services were Orthopedics (31%), Neurosurgery (19%), and Intensive Care Units (12%). Yapar et al.³, found that departments most frequently requesting the consultation services were Orthopedics (26.9%), Neurology (18.5%), and Cardiology (11.8%). It was respectively Oncology (9.4%), Intensive Care Unit (7.8%), and General Surgery (6.3%) in our study.

Distribution of consultations varies from hospital to hospital. For this reason every hospital should be aware of its distribution and should plan consultation service and training programs according to this distribution.

Yinnon ⁴ evaluated 14005 infectious disease consultations that were performed during a 5-year period. The reason for these consultations was therapy (58%), diagnosis (13%), both (24%), and prophylaxis (4%). The most frequent purposes were diagnosis and treatment (60.2%), treatment planning (17.3%), and diagnosis problems (13.5%) in our study (Table 2).

Our department has been giving infectious disease consultations for 15 years but consultation requests have increased over recent years (3.6% in 2002, 6.2% in 2003, 8.3% in 2004, 9.7% in 2005). This increase is a result of both trusted treatment regimens administered and antibiotic restriction policies in our country put in effect in 2002. Restriction of broad spectrum antibiotics increased both

consultation numbers and consultations requested for antibiotic therapy. The general purpose of consultation was diagnosis and treatment planning at a rate of 77.5%. Therapies were modified after consultation at a rate of 58.1% (initiate, change, add antibiotic, or increase the dose). There was a correlation between purposes of consultation and recommendations (Table 2 and 4) in our study.

Yinnon ⁴ analyzed consultations and found that recommendations were as follows: start antibiotic therapy (14.4%), stopping antibiotic therapy (5.5%), and changing antibiotic therapy (26.5%). Same recommendations were respectively 26.5%, 8.1%, and 24.3% in our study (Table 4).

Despite implementation of restricted antibiotics policy in our hospital, 54% (428/793) of the patients with existing antibiotic treatments were on restricted antibiotics at the time of the consultation. This could be explained by two factors. First of all most consultations were requested by hematology, oncology, and nephrology clinics that had numerous immunosuppressive patients or patients with febrile neutropenia. Also nearly all clinic requests of restricted antibiotics were approved during off-hours.

Fox et al.⁵, reviewed retrospectively 2 groups of trauma patients admitted to a regional trauma center before (1990) and after a policy change (1991). In 1990, infectious disease consultation was performed only when it was needed. In 1991, trauma patients were followed and therapies were planned by infectious disease specialist. As a result, diagnosis of infection increased by 49%, while antibiotics use decreased by 57% compared to the previous year. The antibiotic costs were reduced; however, consultation and microbiological culture costs were increased. Akalin et al.⁶, performed a 2-year study in our intensive care unit where infectious disease consultant followed up each patient from admission to discharge by daily visits to the intensive care unit. This study demonstrated that sensitivity rates of imipenem, ciprofloxacin and aminoglycosides were improved. It is expected that antibiotic resistance would reduce in long term responds to infectious disease consultation services.

As in our study antibiotic doses were changed in only 0.7% (9/1315) of the cases after consultation we conclude that proper dosing is not problematic. Visiting patients in emergency service and routine intensive care unit visits could play a role in this.

Leblebicioglu et al.⁷, evaluated 362 informed consultations.

78.7% of all consultations were requested during working hours. The most common reasons for obtaining consultations were to plan an appropriate treatment (41.4%), select an appropriate prophylaxis (19.3%), interpret laboratory data (10.2%), information about antibiotics (10.2%) and immunization (9.7%). In our study the rate of prophylaxis requests was found as 0.4% (5/1315). Consultations were requested for tetanus prophylaxis in one case and for antibiotic prophylaxis before surgery in four cases as these cases reported beta-lactam allergy (Table 5). As consultations for surgical prophylaxis or immunization are performed either by telephone or personal conversations and guidelines are used for surgical prophylaxis, data about surgical prophylaxis are not recorded on consultation forms. In addition, new restricted antibiotics policy limits the use of prophylactic antibiotics, thus solving the prophylaxis problem.

Sexton et al. ⁸ found that 10% of infectious disease consultations were performed for non-infectious diseases. In our study this rate was found as 10.1% (133/1315). The causes of non-infectious fever were fever due to primary disease (71.5%, 95/133), antibiotic fever (16.5%, 22/133), resorption fever (9%, 12/133), and postoperative fever (3%, 4/133).

In conclusion, we believe that consultations play an important role in infectious disease practice. In this study we found that the purposes of consultations were mainly diagnosis and treatment. As consultations are performed for various infectious diseases, training program for infectious disease speciality should consist of not only communicable diseases, but also all system infections, antibiotic stewardship, nosocomial infections, infections in immunocompromised host, and differential diagnosis of non-infectious causes which was seen frequently. We need also appropriate approval mechanism for restricted antibiotics for off-hours.

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