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The problems related to internal medicine consultations in the emergency department

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ABSTRACT

Objectives: Overcrowding in the Emergency Department (ED) is a serious and growing problem during recent years and one of the main causes of it is dysfunctional consultation system. We aimed to determine the problems related to patients who were admitted to the ED and requested consultations from internal medicine (IM) physicians and to contribute to the gap in the literature regarding this isssue.

Methods: In a period of one year, 3601 patients, who were admitted to the ED of a university hospital and were consulted by IM physicians were included in this prospective cross-sectional study. The epidemiological characteristics of patients, length of ED stay and consultation-related problems were investigated.

Results: The most common problems related to consultations were delayed completion of the consultation procedures for 88 (2.4%) patients, and unnecessary consultation requests for 66 (1.8%) patients, and patient referrals with inappropriate indications from IM outpatient clinics to the ED for 53 (1.5%) patients. There were differences of opinion among IM physicians and emergency medicine specialists regarding the need for consultation for 36 (1%) patients. The most important difference was in the various infections seen in patients with histories of hematologic or solid organ malignancies (n = 9).

Conclusions: According to these findings, good collaboration must be established among ED physicians and consultant physicians. Furthermore, physicians must avoid inappropriate referral patients from outpatient clinics to the ED. Additionally, unnecessary consultation requests from the ED must be avoided, and consultation requests must be addressed quickly.

Keywords: Consultation, emergency department, internal medicine

One of the most significant problems of emergency departments (EDs) during recent years is the increasing number of patients. The main causes for this include increased non-emergency admission to the ED, lack of available hospital beds, dysfunctional consultation and referral systems and delay of diagnostic examinations and interventional procedures. Accordingly, patient ED length of stay may be prolonged, treatment of patients with severe disease may be delayed, workload and stress of ED personnel may increase, dissatisfaction of patients and their relatives may also increase and a situation of general chaos and inadequacy may occur in the EDs [1-5].

Patients may be admitted to ED with very different clinical presentations and degrees of urgency. Accurate and rapid management of these very different cases by an ED physician is not possible. Therefore, consultation, is needed in the management of some special patient groups in the ED, for some special diagnostic tests, treatments and interventions, as well as hospi-

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talization or referral of some patients to other hospitals [6-9]. Internal Medicine (IM) is one of the departments that is most frequently requested consultation by ED physicians [10, 11]. The IM department includes the divisions such as Gastroenterology, Oncology, Nephrology, Hematology, Endocrinology and Rheumatology. Accordingly, IM addresses a wide spectrum of diseases. Patients who have various severities of these diseases are frequently admitted to the ED. In the literature, we could not find a detailed research of the problems related to function of the consultation system among ED and IM physicians.

The aim of this study is to analyse in detail the consultation-related problems for patients admitted to the ED of Bursa Uludağ University Hospital in Turkey, who were requested a consultation from IM physicians. It is hoped that this study will address the research gap regarding this issue. Additional aims are to ensure that proactive plans are made to remove the deficiencies in ED consultation procedures in our hospital, and to ensure that a more effective and rapidly working consultation system is established among ED and IM physicians.

METHODS

In this prospective study., the parameters to be evaluated were determined after a one-month pilot study. After approval by the local Medical Research Ethics Committee., the study included 3601 patients who were admitted to the ED and requested consultation from IM physicians within a one-year period between February 2012 and February 2013. Firstly, a senior research assistant of the IM Department first evaluated the patient who was requested the consultation. The procedure was then concluded either by consultation with a specialist from the relevant division(s) of the IM department (Gastroenterology, Oncology, Nephrology, Hematology, Endocrinology and Rheumatology divisions had inpatient clinics during the study period) or by reevaluation of the patient with a specialist. Data were recorded on the pre-prepared form.

Statistical Analysis

All data were analyzed using the SPSS version 13.0 statistical software package. Mann-Whitney U test was used for comparing binary groups when significant differences were present. For descriptive values, mean (+/- standard deviation) or median and range (minimum-maximum) were given for continuous variables according to the distribution structure of data. Number (n) and percent (%) values were given for categorical variables.

RESULTS

In a one-year period, 85,585 patients were admitted to the ED. 3601 (4.2%) patients of them were consulted by IM department physicians. By gender, 2025 patients (56.2%) were male and 1576 (43.8%) were female. Their mean age (± standard deviation) was 57 ± 16.6 years and age range were 18-104.

Among the patients, 1740 (48.3%) were discharged from the ED, 51 (1.4%) died in the ED, 182 (5.1%) were referred to other hospitals because of lack of available beds, and 1628 (45.2%) were transferred to inpatient clinics. Among the last group, 1351 (83%) were hospitalized to different divisions of IM clinics, and 277 (17%) to other medical and surgical clinics

Table 1. Distribution of the patients according to time to completion of IM consultations and ED length of stay

Time	Number of patients	
	Time to completion of IM consultations	ED length of stay
Less than 30 minutes	676 (18.8%)	69 (1.9%)
Less than 3 hours	3048 (84.7%)	1180 (32.8%)
Less than 8 hours	3462 (96.1%)	2652 (73.6%)
Less than 12 hours	3530 (98,0%)	3075 (85.4%)
More than 24 hours	3 (0.08%)	33 (0.9%)

IM = internal medicine, ED = emergency department

Table 2. Distribution of reasons for prolonged ED length of stay

Reasons of prolonged ED length of stay of the patients	Number of patients
Waiting due to lack of available hospital beds	704 (19.6%)
Waiting due to delay in completion of consultation procedure	129 (3.6%)
Due to difficulty in reaching consultant physician or delay in concluding the consultations (n = 88, 2.4%)	
Waiting for completion of consultations in patients with multiple consultation requirements (n = 41, 1.1%)	
Waiting for completion of treatment, replacement therapy and monitoring treatment of patient in ED	68 (1.9%)
Waiting for endoscopy (gastroscopy, colonoscopy)	33 (0.9%)
Waiting for dialysis	15 (0.4%)
Total	949 (26.4%)

ED = emergency department

for their primary diseases. When evaluated according to IM divisions, 1047 (27.4%) patients were consulted by Gastroenterology, 935 (24.5%) by Oncology, 883 (23.2%) by Nephrology, 631 (16.5%) by Hematology, 258 (6.8%) by Endocrinology and 62 (1.6%) by Rheumatology.

In our study, we evaluated the time to completion of IM consultation procedures and observed that consultations were completed in under 3 hours for 84.7% of patients (Table 1). The mean time to completion was 121 min, and the median time was 74 min (range 10 to 2160 minutes). There was no significant difference between the divisions of the IM clinics when the mean time to completion of consultation were compared to patients who were hospitalized in IM division clinics ($p < 0.05$). The mean and median ED length of stay were 403.1 minutes and 284 minutes (range 21 to 2900 minutes), respectively. Although the ED length of stay was not more than 8 hours according to the ED Operating Procedure of our hospital, this target period was exceeded in 949 patients (26.4%). Reasons for these situations are shown in Table 2.

Of the patients who were consulted by IM physicians in the ED, 165 (4.6%) were referred from different outpatient clinics to the ED, and 147 of them were referred from IM outpatient clinics [Oncology (n = 44, 26.6%), Gastroenterology (n = 30, 18%), Nephrology (n = 28, 17%), Endocrinology (n = 19, 11.5%), Hematology (n = 19, 11.5%), Rheumatology (n = 4, 2.4%) and General Internal Medicine (n = 3, 2%)]. ninety-four of these patients were referrred from IM outpatient clinics to the ED for emergent medical reasons such as acute leukosis, gastrointestinal bleeding, urea and creatinine elevation, electrolyte imbalance, impaired general condition, fever and diabetic ketoacidosis. Fifty-three patients were referred to ED for inappropriate reasons (Table 3).

When evaluating inappropriateness related to consultations, we observed that the most common consultation-related problems were delay in completion of consultation procedures by IM physicians (n = 88, 2.4%) and unnecessary consultation requests by ED

Table 3. Distribution of patients according to the appropriateness of referrals from IM outpatient clinics to the ED

Appropriateness of referrals from IM outpatient clinics to the ED	Number of patients
Appropriate referrals - referrals with emergent medical reasons	94 (2.6%)
Inappropriate referrals	53 (1.5%)
For hospitalization purposes to other inpatient clinics through ED (n = 40, 1.1%)	
For some treatments in ED (n = 9, 0.2%)	
For some laboratory and radiologic examinations in ED (n = 4, 0.1%)	
Total	147 (4.1%)

IM = internal medicine, ED = emergency department

physicians (n = 66, 1.8%).

According to IM physicians, there were no indications found for 66 emergent consultations after evaluation of consultation requests. 62 (95%) of these consultation requests were made between 4 PM and midnight, the period when patients were overcrowded in ED. When the files of these 66 patients were subsequently re-examined by an ED specialist, it was found that there was no need to request consultations for 30 of these patients, while it was necessary to ask for consultations for 36 patients (Table 4). Consultation requests that were deemed to be inappropriate both by IM physicians and ED specialist were presence of mild thrombocytopenia with infectious diseases (n = 5), acute calcular cholecystitis (n = 3), postrenal acute renal failure (n = 3), acute abdomen (n = 2), presence of upper respiratory tract infection in patient with solid organ malignity in cure status (n = 2), mild transaminase elevation (n = 2), mild electrolyte disorders (n = 2), presence of mild ketonuria in the patient admitted due to suicide (n = 2), presence of upper respiratory tract infection in patient with compensated chronic renal failure (n = 2), presence of cystitis in the patient with compensated cirrhosis (n = 2), mild creatinine elevation (n = 2), mild hypercalcemia (n = 1), presence of upper respiratory tract infection in the patient with Takayasu arteritis (n = 1), presence of mild thrombocytopenia in the patient with fracture (n = 1).

DISCUSSION

Consultation is frequently used in EDs during patient assessment. According to various studies in different countries, it is notified that the rate of consultation requests ranges between 20% and 56.4% of ED patients [8, 11-13]. In a review of 12 studies, Lee *et al*. [14] reported a consultation rate of between 20% and 40% in the ED. In the studies conducted in different university hospitals of our country, consultation request rates in EDs were reported to be between 19.7% and 39.1% [15-18].

Most patients who are admitted to EDs have primary problems related to internal medicine. It was reported IM consultations (3-12.7%) were the most common of all ED consultations in several studies [10, 11, 15-18]. In another study, Brick *et al*. [11] analyzed the data of 841 patients, who were admitted to ED of a tertiary hospital in Edmonton, Canada in 2010 and reported that the most frequent consultations were requested from the IM and Cardiology departments, respectively, and the most frequently second consultation was requested from IM department. In 2 studies previously performed in the ED of our hospi-

Table 4. Clinical situations in which IM physicians and ED specialist have differing opinions on the appropriateness of consultation requests

Consultation requests	Number of patients
Various infections observed in patients with histories of hematological or solid organ malignancy treatment in the past	9
Mild diabetic ketosis cases	7
Presence of mild cytopenia with different infectious cases	5
Consultation requests which may be requested in clinics, made in ED for patients with internal medicine problems, who were hospitalized other department clinics due to primary disease	3
In order to ensure an early appointment for patient's next clinic control, although his/her internal problem is not urgent	3
Acute noncalculous cholecystitis	2
Mild anemia	2
Presence of ascites in the patient with heart failure	2
Others (corrosive substance admission in small quantities, mild thrombocytopenia in the patient with thalassemia, presence of multinodular goitre in the patient with maculopapular lesions)	3
Total	36 (1%)

IM = internal medicine, ED = emergency department

tal, consultations were requested most frequently from the IM department, with rate of 10.8% and 6.3%, respectively [10, 18].

Emergency service procedures should be fast. In our study, 84.7% and 96.1% of consultations requested from the IM department were completed within 3 hours and within 8 hours, respectively. The completion time for consultations exceeded 24 hours only in the case of 3 patients (0.08%). In a study by Aygencel *et al*. [17] regarding the epidemiology of IM department consultations in the ED of a university hospital in Ankara, Turkey, they reported that 86.6% of IM department consultations were concluded within 48 hours. The main reasons for quicklier completion of IM consultations in our study were as follows: the laboratory tests required for the patient prior to the consultation were substantially performed by ED physicians and IM consultation requests were quickly responded by a senior IM department research assistant whose sole task was to evaluate the consultations.

While the mean time to completion of IM consultations was 121 min, the mean length of stay in ED was 403.1 min and the length of stay was more than 8 hours for 26.4% of patients (n = 949). Although the time to consultation completion was short in our study, the primary cause for prolonged ED stays was the lack of available clinic beds (74.2%). Various studies from the USA, Taiwan and Spain reported that the most common cause of ED patient overcrowding was lack of available clinic beds [19-22].

In our study, 147 of the patients undergoing IM consultations were referred to the ED from IM outpatient clinics. It was determined that 53 of these referrals were inappropriate and most of them (n = 40) were referred to ensure transfer from the ED to other department clinics with available beds when no beds were available in IM clinics. According to a study by Howard *et al*. [23], some of the reasons for ED visits from non-urgent patients include direct referrals by their primary physicians, difficulties obtaining appointments with their physicians and patient belief that they should be examined as soon as possible by emergency services.

Overcrowding of patients in the ED is one of the reasons that ED physicians request many unnecessary consultations. In our study, it was reported that the consultations requested by the ED were unnecessary in 66 cases (1.8%) according to the IM physicians. The most important reason for unnecessary consultations was inadequate assesment of presenting complaints and/or clinic and laboratory examination results by ED physicians during the initial examination of the patient due to the intense ED workload in the evening hours when the number of patients was the highest. In a survey study [24] was conducted of 439 emergency physicians and consultant physicians from 6 hospitals in Turkey to research problems and solutions related to ED consultations. The 3 most significant problems for consultant physicians were "patients who need consultations were not sufficiently examined by an ED physician", "not having enough information in the patients' file" and "invitation of unnecessary consultation". The 3 most significant problems for ED physicians were "trying to complete the diagnostic procedures for patients in the ED", "trying to treat patients who need hospitalization in the ED" and "not finishing the consultation with a definite statement and writing re-consultation forms".

In the case of 36 patients, it was determined that there was difference of opinion between emergency physicians and IM physicians regarding suitability of consultation. The most common reason for these different views included various infections in patients with histories of malignancy, diabetic ketosis cases and cases of mild cytopenia in patients with infectious diseases. Accordingly, consensus meetings between ED and IM physicians should be held regarding these controversial cases so that appropriate decisions can be made.

Limitations

Although we think that it is a suitable example in terms of consultation-related problems in third level EDs in our country, the main limitation of our study was that there was only one center data. There may be differences in health systems according to countries, especially in ED operation procedures and consultation and referral systems. Therefore, it is possible that there may be some differences depending on the countries in consultation-related problems and solution proposals.

CONCLUSION

According to the results of our study, the most impor-

tant consultation-related problems were delay in completion of consultation procedures by IM physicians, unnecessary consultation requests by ED physicians and inappropriate referrals from IM outpatient clinics to ED. Also controversial situations regarding the need for consultation among IM and ED physicians were exemplified. To resolve of these problems is that good collaboration must be established among ED physicians and consultant IM physicians. Additionally, we hope that our study will be a model for similar investigations in other hospitals.

Authors' Contribution

Study Conception: CD; Study Design: CD, VG; Supervision: CD, VG; Funding: CD, VG, ŞAA; Materials: CD, VG, ŞAA; Data Collection and/or Processing: CD, VG, ŞAA; Statistical Analysis and/or Data Interpretation: CD, VG, ŞAA; Literature Review: CD, VG, ŞAA; Manuscript Preparation: CD, VG, ŞAA and Critical Review: CD, VG, ŞAA.

Conflict of interest

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