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Research Article

A comprehensive retrospective review of ınpatient hematology consultations at a tertiary care hospital

Üçüncü basamak bir hastanede yatan hastalarda hematoloji konsültasyonlarının kapsamlı retrospektif incelemesi

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Abstract

Aim: Hematological parameters are affected by many hematological and non-hematological reasons. In many diseases, values that go beyond normal limits are often a reason for consultation by physicians in other branches of science. In our study, what consultations are requested from hematology in patients hospitalized in our hospital, the most common hematological problems encountered by the departments, and the results of the consultations were examined.

Material and Methods: A total of 684 consultations were retrospectively scanned between 2022 and 2023, based on the information obtained from the hospital data system. The study examined the requesting department, consultation reason, patients' comorbid conditions, history of hematologic disorders, hematologic and non-hematologic diagnoses following the consultation, and assessments using peripheral smears and biopsies.

Results: 59.50% of the consultations were requested from internal departments, while 40.50% were requested from surgical departments. The most common reason for requesting consultation was found to be cytopenias with 41.96%. The most common reason for consultation requested for cytopenia was thrombocytopenia. While 45.50% of the consultations were evaluated with peripheral smear, 10.20% were evaluated with bone marrow biopsy.

Conclusion: We determined the issues on which physicians in other departments most frequently felt the need for consultation, how many of these resulted in a hematological diagnosis, and the non-hematological diagnoses that most affected blood parameters. We believe that the results of our study will be guiding in training programs and preparation of consultation books.

Keywords: consultation, hematology, inpatient

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Öz

Amaç: Hematolojik parametreler, birçok hematolojik ve hematolojik olmayan nedenle etkilenmektedir. Birçok hastalıkta, normal sınırlar dışına çıkan değerler diğer tıp branşlarındaki hekimler tarafından sıklıkla konsültasyon talep edilmesine neden olmaktadır. Bu çalışmada, hastanemizde yatan hastalarda hematolojiden hangi konsültasyonların istendiği, bölümler tarafından en sık karşılaşılan hematolojik problemler ve konsültasyon sonuçları incelenmiştir.

Gereç ve Yöntemler: 2022-2023 yılları arasında toplam 684 konsültasyon, hastane veri sistemi üzerinden retrospektif olarak tarandı. Çalışmada, konsültasyonu talep eden bölüm, konsültasyon nedeni, hastaların komorbid durumları, hematolojik hastalık öyküsü, konsültasyon sonrası hematolojik ve hematolojik olmayan tanılar, periferik yayma ve biyopsi ile yapılan değerlendirmeler incelendi.

Bulgular: Konsültasyonların %59.50'si dahili bölümlerden, %40.50'si cerrahi bölümlerden talep edildi. Konsültasyon talep etme nedenleri arasında en yaygın neden, %41.96 ile sitopeniler olarak bulundu. Sitopeni için talep edilen en sık konsültasyon nedeni trombositopeni idi. Konsültasyonların %45.50'si periferik yayma ile, %10.20'si kemik iliği biyopsisi ile değerlendirildi.

Sonuçlar: Diğer bölümlerdeki hekimlerin hangi konularda en sık konsültasyona ihtiyaç duyduğunu, bunlardan kaçının hematolojik tanı ile sonuçlandığını ve kan parametrelerini en çok etkileyen hematolojik olmayan tanıları belirledik. Çalışmamızın sonuçlarının eğitim programlarında ve konsültasyon kitaplarının hazırlanmasında yön verici olacağı kanaatindeyiz.

Anahtar Kelimeler: konsültasyon, hematoloji, yatan hasta

Introduction

Consultations for inpatients at tertiary healthcare institutions allow doctors to reach out to experienced colleagues from other specialties to manage complex cases. These consultations, which are a fundamental part of clinical practice, facilitate the exchange of critical information, particularly for patients with multiple comorbidities requiring a multidisciplinary approach (1). They also expedite problem-solving in challenging cases and foster discussion and learning, an essential component in academic hospitals where resident doctors undergo training (2).

Today, consultations can be conducted more efficiently through e-consultations via hospital information systems. However, such consultations still demand considerable time and human resources (3, 4). They constitute a significant workload in addition to routine daily duties, yet they must not be misused for purposes such as scheduling patient appointments (5-7). Since limited data exist regarding this activity, it remains an underexplored aspect of service delivery.

Understanding inpatient consultation profiles is crucial for effectively organizing human resources, equipment, and related supplies (8). In specialties like hematology, identifying potential breakdowns and implementing improvements within the system is essential, making analyses in this area highly necessary. This information is extremely important, as it will serve as a guide for hematology training in other medical fields and in the preparation of consultation handbooks. This study aimed to investigate the profile of inpatient consultations requested by other specialties and provided by the hematology team in an academic tertiary care hospital.

Material and Methods

The Kartal Dr. Lutfi Kirdar City Hospital is a tertiary-level teaching and research hospital with a total bed capacity of 1,105, including 145 intensive care beds. It provides specialty training in 54 medical fields and accepts patients across all departments, including emergency care. In this study, all patients for whom hematology consultations were requested between January 2023 and November 2023 were included. All consultations requested from the hematology department were retrospectively reviewed using records from the hospital information system. Our study received approval from the Kartal Dr. Lütfi Kırdar City Hospital Clinical Research Ethics Committee (Date: 30.10.2023, Decision No: 2023/5l4/260/30) and was conducted in compliance with the Helsinki Declaration of Medical Ethics.

Data were collected for 684 included patients, encompassing age, gender, comorbidity information, the department requesting the consultation, the reason for the consultation, and whether the patients had a prior hematological diagnosis in their medical history. Additional data included consultations resulting in a hematological diagnosis, cases assessed with peripheral blood smears, those evaluated by biopsy, and final

decision outcomes. The reasons for requesting consultations were obtained from e-consultation request forms. Most consultations concluded with test recommendations, test interpretations, treatment suggestions, treatment planning, or follow-up. Cases diagnosed with a hematological condition requiring treatment were finalized with a treatment plan. In contrast, cases unrelated to hematology were concluded with a follow-up recommendation. Cases requiring hematological investigation were categorized as "test required," while test and treatment suggestions were applied to non-hematological cases that involved general recommendations. The internal medicine departments included in the analysis were infectious diseases, general internal medicine, nephrology, neurology, pulmonary diseases, radiation oncology, oncology, gastroenterology, emergency medicine, ophthalmology, rheumatology, endocrinology, occupational health, hyperbaric oxygen therapy, physical therapy, organ transplantation, family medicine, and psychiatry.

Statistical analyses

All analyses were performed using IBM SPSS Statistics for Windows, Version 25.0 (Statistical Package for the Social Sciences, IBM Corp., Armonk, NY, USA). Categorical variables were summarized as descriptive statistics, including frequencies and percentages.

Results

Among the 684 consultation patients evaluated, the mean age was 56.04±17.55 years, with 46.93% being female and 53.07% male. A hematological diagnosis was present in 19.44% of the patients' medical histories, while 16.37% of the consultations resulted in a new hematological diagnosis. Of these diagnoses, 37.57% were non-hematological. Peripheral blood smears were utilized in 45.50% of the consultations, and 10.2% of the cases were evaluated using biopsy. Consultations requested by internal medicine departments made up 59.5% of the total, while 40.5% were requested by surgical departments (Table 1).

The most common comorbidities observed among the patients were as follows: 57.14% of those with infectious diseases had COVID-19 (Coronavirus infection); 48.65% of patients with nephrological diseases had chronic kidney failure; 77.5% of gynecology patients were pregnant; 83.34% of those with endocrine disorders had diabetes mellitus (DM); and 46.16% of patients with cardiovascular diseases had ischemic heart disease. Overall, the primary reason for consultation requests was cytopenias, accounting for 41.96%, followed by preoperative evaluations at 8.19% (Table 2).

Table 1. General characteristics of consultations

Variables	Results n = 684
Age, years	56.04 ± 17.55
Gender, n (%)	
Female	321 (46.9)
Male	363 (53,1)
Consultations with a history of hematological diagnosis, n (%)	133 (19.4)
Consultations receiving a hematological diagnosis, n (%)	112 (16.4)
Consultations receiving a non-hematological diagnosis, n (%)	257 (37.6)
Consultations tested with peripheral smear, n (%)	311 (45.5)
Consultations resulting in biopsy, n (%)	70 (10.2)
Departments requesting consultations, n (%)	
Internal Departments	407 (59.5)
Surgical Departments	277 (40.5)

The data are expressed as the mean ± SD or number (%). Internal medicine departments: infection, general internal medicine, nephrology, neurology, chest diseases, radiation oncology, oncology, gastroenterology, oncology, emergency internal medicine, ophthalmology, rheumatology, endocrinology, occupational medicine, hyperbaric o2, physical therapy, organ transplantation, family medicine, psychiatry. Surgical departments: others.

Table 2. Reasons for consultation requests.

Variables	Results n = 684
Cytopenias, n (%)	287 (41.9)
Preoperative assessment, n (%)	56 (8.2)
Presence of M protein, n (%)	24 (3.5)
Polycythemia, n (%)	17 (2.5)
Thrombocytosis, n (%)	16 (2.3)
Leukocytosis, n (%)	41 (6.0)
Eosinophilia, n (%)	1 (0.2)
Treatment planning, n (%)	5 (0.7)
Suspicion of hematological malignancy, n (%)	23 (3.4)
Consultation for hematological diagnosis, n (%)	29 (4.2)
Hereditary coagulation factor deficiency, n (%)	1 (0.2)
Elevated PT/aPTT/INR, n (%)	13 (1.9)
Hypercalcemia, n (%)	5 (0.7)
Bleeding/bruising/petechiae, n (%)	26 (3.8)
Lymphadenopathy/splenomegaly, n (%)	32 (4.7)
Cross incompatibility, n (%)	9 (1.31)
Other, n (%)	99 (14.5)

The data are expressed as the number (%). aPTT, activated partial thromboplastin time; INR, international normalized ratio; PT, prothrombin time.

Other reasons for consultation requests included various factors such as appointment scheduling, drug report preparation, biopsy result consultation, obtaining a second opinion, elevated liver enzymes, and fever. Among consultations requested due to cytopenia, 40.56% were for thrombocytopenia, 20.98% for pancytopenia, and 18.88% for anemia, which was the third most common reason (Table 3).

Table 3. Distribution of consultations requested for cytopenia

Variables	Results n = 286
Leukopenia, n (%)	11 (3.9)
Neutropenia, n (%)	18 (6.3)
Lymphopenia, n (%)	10 (3.5)
Bicytopenia, n (%)	17 (5.9)
Pancytopenia, n (%)	60 (21.0)
Thrombocytopenia, n (%)	116 (40.6)
Anemia, n (%)	54 (18.9)

The data are expressed as the number (%).

For preoperative evaluations, thrombocytopenia was the most frequent reason, accounting for 17.86%, followed by requests related to preoperative evaluation in patients with a hematological diagnosis, which made up 16.07%. Peripheral blood smears were most commonly performed for thrombocytopenia (36.01%), followed by pancytopenia (18.34%) and leukocytosis (12.55%), which were the second and third most common reasons, respectively (Table 4).

Bone marrow biopsy was most frequently performed for pancytopenia (25.71%), followed by the presence of M-protein (24.28%) and leukocytosis (17.14%) (Table 5). Among consultations requested for thrombocytopenia, 96.6% were evaluated using a peripheral blood smear, while 1.7% required a bone marrow biopsy. Of the thrombocytopenia consultations, 60.3% involved platelet counts below 50,000/mm^3, 29.31% were classified as pseudothrombocytopenia, 16.92% were attributed to gestational thrombocytopenia, and 6.15% were secondary to infection. The most common hematological diagnosis among patients consulted for thrombocytopenia was idiopathic thrombocytopenic purpura, identified in 30.79% of cases (Table 6).

Among patients who received a hematological diagnosis following consultations, multiple myeloma and non-Hodgkin lymphoma were the most common, each accounting for 10.72% of cases. The second most frequent diagnosis was myelodysplastic syndrome, observed in 9.82% of cases, followed by essential thrombocytosis at 8.04% and acute myeloid leukemia at 7.15% (Table 7). In terms of medical history, non-Hodgkin lymphoma was the most frequently documented prior condition, identified in 21.06% of patients (Table 8).

Table 4. Consultation requests indicated for peripheral smear

Variables	Results n = 311
Thrombocytopenia, n (%)	112 (36.0)
Anemia, n (%)	27 (8.7)
Leukocytosis, n (%)	39 (12.6)
Pancytopenia, n (%)	57 (18.3)
Bicytopenia, n (%)	14 (4.5)
Thrombocytosis, n (%)	4 (1.3)
Leukopenia, n (%)	5 (1.1)
Neutropenia, n (%)	6 (1.9)
Presence of M protein, n (%)	5 (1.6)
Elevated PT/APTT/INR, n (%)	3 (1.0)
General examination, n (%)	1 (0.32)
Lymphadenopathy/Splenomegaly, n (%)	4 (1.3)
Bleeding, n (%)	2 (0.6)
Preoperative assessment, n (%)	13 (4.2)
Treatment planning, n (%)	1 (0.3)
Neuroacanthocytosis, n (%)	3 (1.0)
Suspicion of hematological malignancy, n (%)	2 (0.6)
Suspicion of multiple myeloma, n (%)	1 (0.3)
Suspicion of bone marrow infiltration, n (%)	1 (0.3)
Bone marrow activation on MRI, n (%)	1 (0.3)
Cross-match incompatibility, n (%)	1 (0.3)
Request for peripheral smear, n (%)	2 (0.6)
Suspicion of DIC, n (%)	1 (0.3)
Eosinophilia, n (%)	1 (0.3)
Elevated ferritin, n (%)	1 (0.3)
Consultation for hematological diagnosis, n (%)	3 (1.0)
Chorea etiology, n (%)	1 (0.3)

The data are expressed as the number (%). aPTT, activated partial thromboplastin time; DIC, disseminated intravascular coagulation; INR, international normalized ratio; MRI, magnetic resonance imaging; PT, prothrombin time.

Table 5. Consultation requests indicated for bone marrow biopsy

Variables	Results n = 70
Presence of M protein, n (%)	17 (24.3)
Leukocytosis, n (%)	12 (17.1)
Thrombocytosis, n (%)	4 (5.7)
Thrombocytopenia, n (%)	2 (2.9)
Anemia, n (%)	5 (7.1)
Pancytopenia, n (%)	18 (25.7)
Preoperative assessment, n (%)	1 (1.4)
Lymphadenopathy, n (%)	1 (1.4)
Hypercalcemia, n (%)	3 (4.3)
Elevated sedimentation, n (%)	2 (2.9)
Bicytopenia, n (%)	2 (2.9)
Consultation for hematological diagnosis, n (%)	1 (1.4)
Elevated PT/APTT/INR, n (%)	1 (1.4)
Splenomegaly, n (%)	1 (1.4)

The data are expressed as the number (%). aPTT, activated partial thromboplastin time; INR, international normalized ratio; PT, prothrombin time.

Table 6. Hematological diagnoses in consultations requested due to thrombocytopenia

HELLP syndrome, n (%)	2 (15.4)
Hemolytic uremic syndrome, n (%)	1 (7.7)
Heparin-induced thrombocytopenia, n (%)	2 (15.4)
Idiopathic thrombocytopenic purpura, n (%)	4 (30.8)
Myelodysplastic syndrome, n (%)	2 (15.4)
Thrombotic thrombocytopenic purpura, n (%)	2 (15.4)

The data are expressed as the number (%).

Table 7. Distribution of hematological diagnoses made as a result of consultations

Variables	Results n = 112
Acute lymphoblastic leukemia, n (%)	1 (0.9)
Acute myeloid leukemia, n (%)	8 (7.2)
Acute promyelocytic leukemia, n (%)	1 (0.9)
Alpha thalassemia trait, n (%)	1 (0.9)
B-thalassemia intermedia, n (%)	1 (0.9)
B-thalassemia minor, n (%)	1 (0.9)
B-thalassemia trait, n (%)	1 (0.9)
Castleman disease, n (%)	1 (0.9)
Acquired hemophilia, n (%)	1 (0.9)
Essential thrombocytosis, n (%)	9 (8.0)
Factor VII deficiency, n (%)	2 (1.8)
HELLP syndrome, n (%)	2 (1.8)
Hemolytic uremic syndrome, n (%)	1 (0.9)
Heparin-associated thrombocytopenia, n (%)	2 (1.8)
Hodgkin lymphoma, n (%)	1 (0.9)
Idiopathic myelofibrosis, n (%)	4 (3.6)
Idiopathic thrombocytopenic purpura, n (%)	4 (3.6)
Hereditary thrombophilia, n (%)	2 (1.8)
Chronic lymphocytic leukemia, n (%)	6 (5.4)
Chronic myeloid leukemia, n (%)	7 (6.3)
Chronic myelomonocytic leukemia, n (%)	1 (0.9)
MHTRF gene mutation-thrombophilia, n (%)	1 (0.9)
Multiple myeloma, n (%)	12 (10.7)
Myelodysplastic syndrome, n (%)	11 (9.8)
Non-Hodgkin lymphoma, n (%)	12 (10.7)
Autoimmune hemolytic anemia, n (%)	3 (2.7)
Plasma cell disease-non-multiple myeloma, n (%)	4 (3.6)
Polycythemia vera, n (%)	5 (4.5)
CNS lymphoma, n (%)	1 (0.9)
Thrombotic thrombocytopenic purpura, n (%)	4 (3.6)
Von Willebrand disease, n (%)	2 (1.8)

The data are expressed as the number (%). CNS, central nervous system; MHTRF, methylenetetrahydrofolate reductase.

Among the consultations resulting in non-hematological diagnoses, 15.17% were caused by pseudothrombocytopenia, while 14.39% were cytopenias secondary to infection. Across all departments, hematology consultations were most frequently requested by internal medicine (20.16%), followed by infectious diseases (17.39%). The most common reason for consultation by internal medicine was anemia, whereas infectious diseases primarily requested consultations for thrombocytopenia. Thrombocytopenia was observed to be the most common reason for consultation requests across all departments. Notably, 53.03% of the consultations from obstetrics and gynecology were due to thrombocytopenia. In surgical departments, most consultations were requested for preoperative evaluations, with thrombocytopenia being the most common issue. In 30.99% of all consultations, only follow-up was recommended, while 26.46% involved hematological tests, and 12.13% resulted in treatment plans due to a hematological diagnosis (Table 9).

Table 8. Distribution of hematological diagnoses in the history of consulted patients

Variables	Results n = 133
Acute lymphoblastic leukemia, n (%)	1 (0.8)
Acute myeloid leukemia, n (%)	8 (6.0)
B-thalassemia intermedia, n (%)	1 (0.8)
B-thalassemia minor, n (%)	2 (1.5)
Burkitt lymphoma, n (%)	2 (1.5)
Essential thrombocytosis, n (%)	2 (1.5)
Factor V Leiden mutation, n (%)	3 (2.3)
Glanzman disease, n (%)	1 (0.8)
Hemophilia A, n (%)	1 (0.8)
Hemolytic anemia, n (%)	1 (0.8)
Hereditary spherocytosis, n (%)	1 (0.8)
Hodgkin lymphoma, n (%)	12 (9.0)
Idiopathic myelofibrosis, n (%)	2 (1.5)
Idiopathic thrombocytopenic purpura, n (%)	11(8.3)
Hereditary factor deficiency, n (%)	1 (0.8)
Chronic myeloid leukemia, n (%)	5 (3.8)
Chronic lymphocytic leukemia, n (%)	24 (18.1)
Multiple myeloma, n (%)	9 (6.8)
Myelodysplastic syndrome, n (%)	9 (6.8)
Non-Hodgkin lymphoma, n (%)	28 (21.0)
Sickle cell anemia, n (%)	1 (0.8)
Plasma cell disease-non-multiple myeloma, n (%)	1 (0.8)
Polystemia vera, n (%)	3 (2.3)
Prothrombin gene mutation, n (%)	1 (0.8)
CNS lymphoma, n (%)	1 (0.8)
Hairy cell leukemia, n (%)	1 (0.8)
Von Willebrand disease type-I, n (%)	1 (0.8)

The data are expressed as the number (%). CNS, central nervous system; MHTRF, methylenetetrahydrofolate reductase.

Table 9. Conclusion of consultations.	
Variables	Results n = 684
Anticoagulation use recommendation, n (%)	9 (1.3)
Antiaggregant use recommendation, n (%)	1 (0.2)
Biopsy recommendation, n (%)	31 (4.5)
Phlebotomy recommendation, n (%)	1 (0.2)
Hematology expert opinion request, n (%)	1 (0.2)
Hematology unrelated, n (%)	23 (3.4)
Waiting for pathology result, n (%)	2 (0.3)
Plasmapheresis planning, n (%)	3 (0.4)
Appointment recommendation, n (%)	5 (0.7)
Waiting for cytology result, n (%)	1 (0.2)
Follow-up, n (%)	212 (31.0)
General treatment recommendation, n (%)	66 (9.6)
Treatment plan due to hematological diagnosis, n (%)	83 (12.1)
Hematological examination, n (%)	181 (26.5)
General examination recommendation, n (%)	1 (0.2)
Tocilizumab use recommendation, n (%)	1 (0.2)
Transfusion recommendation, n (%)	63 (9.2)
The data are expressed as the number (%).	

Discussion

Our study, by examining consultation patterns, aimed to address key questions such as: What are our shortcomings as physicians, particularly in hematology? How can we improve the consultation process? Which areas should we emphasize more in education programs and guidelines for other departments? Additionally, it sought to identify deficiencies that could be addressed to reduce unnecessary workload. We believe that our findings will serve as a guide in the development of future guidelines and education programs.

Consultations allow healthcare professionals to utilize the expertise of colleagues from other medical fields when managing complex cases that require a multidisciplinary approach. Nowadays, consultations can be rapidly accessed through hospital information systems. They play a critical role in the training of resident physicians, while also constituting a significant portion of a doctor's routine workload. Unfortunately, consultations are sometimes misused for unnecessary purposes, such as scheduling patient appointments. The proper interpretation of a complete blood count (CBC), one of the most accessible first-line tests in almost all centers, is essential. Assessing whether results fall within or outside of the normal range is a mathematical evaluation, not a medical one, and should not be confused with the practice of medicine.

When evaluating hematological parameters, physicians should integrate the patient's medical history, current medications, clinical status, and physical examination findings. The effects of infections caused by microorganisms, autoimmune or inflammatory diseases, kidney and liver disorders, other systemic conditions, and medications on hematological parameters must be thoroughly understood by the responsible physician. After initial assessments, patients presenting to primary specialties should be appropriately referred to subspecialties. Directly referring a patient with elevated creatinine levels to nephrology, one with elevated liver enzymes to gastroenterology, or one with anemia to hematology without a comprehensive internal medicine evaluation is an incorrect practice. Unfortunately, factors such as the high number of patients per physician, inadequate role modeling for residents in requesting consultations, and the limited number of studies on this topic have hindered the establishment of general principles. A competent physician, who understands that anemia is often a symptom rather than a standalone disease, should guide patients effectively through diagnostic testing. In a study by Venkatesh et al., an e-consultation program was tested to support physicians before referring patients to gastroenterology (9). The program allowed primary care physicians to resolve clinical issues independently, thereby reducing the number of consultations. Consequently, gastroenterologists could allocate more time to complex and specific cases (9-11)

In the literature, most studies on consultations focus on evaluating the workflow and demand in emergency departments (12). Leithead et al. evaluated emergency consultations in vascular surgery (13), while Neuhaus et al. investigated emergency consultations in the plastic surgery (14). Similar to our study, these investigations examined the reasons for requesting consultations and questioned whether the consultations labeled as urgent were genuinely emergent. Both studies also identified deficiencies in workflow and training, emphasizing the need for improvements in these areas (13, 14). In a limited number of studies, inpatient consultations have also been evaluated. Sullivan et al., n their analysis of urology consultations requested for inpatients, found that many of these consultations could have been managed through outpatient follow-up (15). The study concluded that new guidelines need to be developed to address this issue (15). Similarly, studies on inpatient consultations in orthopedic and immunology departments emphasized improving consultation workflows. These studies advocated for enhancing resident physician training and developing guidelines to prevent unnecessary

workloads, particularly to reduce the burden of non-essential consultations (16, 17). Our initial observation during this study was that physicians in both internal medicine and surgical fields frequently requested hematology consultations for minor deviations in hematological parameters, even when these changes were only slightly outside the normal range. Consequently, only 16.4% of consultations resulted in a hematological diagnosis, while 31.0% concluded with a simple recommendation for follow-up.

Peripheral blood smear is an essential component of hematological assessment. This test, which evaluates abnormal morphological and numerical changes in blood cells, provides valuable insights for experienced hematologists and should only be requested when clinically necessary. Properly spreading the blood on a slide, staining it, and examining it under a microscope under optimal conditions are time-intensive processes. Efficient time management is crucial for both the physician and the patient's recovery process. A study supporting this perspective emphasized that the time taken for a physician to respond to a consultation is closely linked to the patient's length of stay in the emergency department (18, 19). Thus, unnecessary requests for peripheral blood smears not only increase the workload for healthcare workers and physicians but also lead to inefficient use of time. In our study, nearly half of the consultations (45.5%) were evaluated using a peripheral smear, with the majority performed for thrombocytopenia. Information about platelet count thresholds that pose a bleeding risk or are relevant for surgical interventions is part of fundamental medical knowledge. However, the frequent consultation requests for thrombocytopenia suggest that some physicians may either lack this knowledge or seek confirmation from a hematologist. This tendency could also reflect an effort to shift legal responsibility, as 39.7% of thrombocytopenia consultations involved patients with platelet counts exceeding 50,000. It is important to emphasize that peripheral blood smears should not be considered an indispensable part of every hematology consultation. Automatically requesting a smear for each patient unnecessarily increases workload. Instead, the decision to perform a peripheral smear should be made by the hematologist based on clinical judgment.

When considering all departments, cytopenias emerged as the most common reason for requesting consultations, accounting for 41.9% of all requests. Under this category, consultations were requested for conditions such as neutropenia, leukopenia, thrombocytopenia, anemia, and lymphopenia. Many of these cases involved patients with values only slightly outside the normal range, which were neither clinically significant nor life-threatening. Thrombocytopenia was the leading cause of concern within the category of cytopenias, particularly in the obstetrics and gynecology department, where thrombocytopenia in pregnant women was the most frequent reason for consultation. In our study, 16.9% of thrombocytopenia cases were classified as gestational thrombocytopenia. A platelet count of 50,000 or above is considered sufficient for all types of delivery. However, we observed that consultation requests were made even for pregnant patients with platelet counts exceeding 100,000 but still below the normal range to assess the appropriateness of delivery. This observation suggests that these requests were driven by knowledge gaps, reluctance to assume legal responsibility, or uncertainty requiring confirmation. To address this issue, it is essential to support these departments through targeted training programs and the development of clear guidelines for non-hematology physicians.

We recognize that consultations are a vital component of the learning process for resident physicians, providing a quick and practical way to gain experience. Senior physicians should guide junior doctors in making thoughtful consultation requests and help them navigate available resources and guidelines. Through mentorship and by promoting conscious consultation practices, experienced physicians can ensure that residents develop sound clinical judgment while utilizing healthcare resources efficiently (20). A study by Rutsky et al., which examined the contribution of inpatient care to the education process, supports these perspectives (21). These findings highlight the importance of consultations in fostering learning and experience for resident physicians, emphasizing that consultations are integral to their clinical training and professional development (5, 21-23).

The majority of multiple myeloma patients present with acute renal failure, often requiring hemodialysis and management by the nephrology department. In such cases, protein electrophoresis and immunoelectrophoresis are commonly requested to detect paraproteinemia. Among these patients, the presence of M-protein was identified as the most frequent reason for nephrology consultations, accounting for 48% of the requests. Additionally, M-protein was the leading indication for

bone marrow biopsy, representing 24.3% of cases. As a result of these biopsies, 10.7% of patients were diagnosed with multiple myeloma and subsequently received a treatment plan. The ease with which protein electrophoresis can be requested by various departments, combined with the straightforward detection of M-protein, likely explains why multiple myeloma was the most frequently diagnosed condition following consultations (24).

Among all departments, general internal medicine was the most frequent requester of consultations, followed by infectious diseases. General internal medicine primarily requested consultations for anemia, whereas infectious diseases most commonly requested consultations for cytopenias. The prominence of anemia as the leading reason for consultation requests from internal medicine was unexpected. It is important to note that anemia is often a symptom rather than a standalone hematological disease. Conditions such as chronic kidney failure, liver diseases, and autoimmune or inflammatory disorders can lead to anemia. Additionally, bone marrow suppression due to chronic systemic diseases may result in anemia of chronic disease. It is also noteworthy that the infectious diseases department frequently requests consultations for cytopenias. Infections are among the primary causes that affect hematological parameters. Monitoring post-infection leukocytosis, leukopenia, neutropenia, or lymphopenia in conjunction with the patient's clinical status and infection markers, determining whether the condition is acute or chronic, and keeping the patient under observation can address many concerns and reduce unnecessary workload. E-consultations offer distinct advantages over face-to-face consultations, particularly in terms of rapid access to specialists and quicker response times. A study investigating the impact of perioperative hematology consultations—both face-to-face and e-consultations—on surgical outcomes found that e-consultations provided faster responses and were equally effective as in-person consultations (25). Another study, while acknowledging the faster response times of e-consultations, argued that this model increased consultation workload. The ease and quick access to specialists often led to consultations being requested for minor changes in hematological parameters that might not have warranted a formal consultation under normal circumstances (26).

Conclusion

We determined the issues on which physicians in other departments most frequently felt the need for consultation, how many of these resulted in a hematological diagnosis, and the non-hematological diagnoses that most affected blood parameters. This study is based on data from a single center, and similar studies are limited in our country. We believe that the results of our study will be guiding in training programs and preparation of consultation books.

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Conflicts of Interest

The authors declare they have no conflicts of interest.

Ethics Approval

The study was performed in accordance with the Declaration of Helsinki, and was approved by the Kartal Dr. Lütfi Kırdar City Hospital Clinical Research Ethics Committee (Decision No: 2023/5I4/26060, Date: 30.10.2023).

Informed Consent

The need for informed consent was waived under the approval of the Local Ethics Committee due to the retrospective design.

Availability of Data and Material

The data that support the findings of this study are available on request from the corresponding author.

Authors' contribution

Concept – A.N.K., Design – A.N.K., Supervision – E.T.E., Data collection and/or processing – A.N.K., and E.T.E., Analysis and/or interpretation – A.N.K., and E.T.E., Writing – A.N.K., Critical review- E.T.E. All authors read and approved the final version of the manuscript.

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