HEMATOLOGY, TRANSFUSION AND CELL THERAPY

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Oral Abstracts

Adult Hematology Abstract Categories

Acute Leukemias
OP 1

PHARMACOVİGİLANCE OF DRUG-INDUCED LEUKEMİA: A DESCRİPTİVE STUDY OF FDA ADVERSE EVENT REPORTİNG SYSTEM FROM 1969-2024

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Background: Drug-induced leukemia is a recognized adverse drug reaction associated with specific classes of medications. This study aims to quantify the frequency of leukemia-related adverse drug reactions and identify the medications most implicated as potential causes in the FDA Adverse Event Reporting System (FAERS). **Methods:** Leukemia-related adverse events were analyzed from the FAERS database spanning the period from 1969 to June 30, 2024. The search terms included various leukemia subtypes, such as “acute myeloid leukemia” (AML), “acute lymphoblastic leukemia” (ALL), “chronic myeloid leukemia” (CML), “chronic eosinophilic leukemia” (CEL), “chronic myelomonocytic leukemia” (CMML), “chronic lymphocytic leukemia” (CLL), and “hairy cell leukemia” (HCL). Cases were categorized by generic drug names, and the number of FAERS reports associating specific drugs with leukemia as an adverse event was determined. Descriptive statistics were applied to analyze the frequency, distribution, and outcomes of the reported cases. **Results:** Between 1969 and June 30, 2024, FAERS recorded a total of 29,153,222 adverse events, of which 26,758 (0.0009%) were linked to leukemia. Of these cases, 11,947 (31.9%) resulted in death. AML was the most frequently reported leukemia subtype, accounting for 14,490 cases, followed by CML with 4410 cases and CLL with 4,276 cases. The age distribution indicated that AML was predominantly reported among adults, with 4,777 cases (32.97%) occurring in individuals aged 18-64 years and 4,877 cases (33.66%) in those aged 65-85 years. Notably, the medications most frequently associated with leukemia were those primarily used in its treatment, including cyclophosphamide, lenalidomide, and imatinib mesylate. **Conclusion:** Medications commonly employed in the treatment of leukemia were frequently reported in FAERS due to concerns regarding their ineffectiveness rather than their expected therapeutic benefits. This highlights the critical need for continuous pharmacovigilance to ensure the efficacy and safety of these therapeutic agents.

Keywords: advers events, leukemia, pharmacovigilance, drug ineffectiveness, drug-induced leukemia.

Table 1 – Distribution of cases by age range

Age	Leukemia Subtype						
	AML (n,%)	ALL (n,%)	CML (n,%)	CEL (n,%)	CMML (n,%)	CLL (n,%)	HCL (n,%)
0-1 Month	8 (0,06)	2 (0,07)					
2 Months-2 Years	96 (0,66)	74 (2,73)	6 (0,14)		4 (0,63)	2 (0,05)	
3-11 Years	363 (2,51)	293 (10,80)	36 (0,82)		9 (1,43)	2 (0,05)	
12-17 Years	305 (2,10)	220 (8,11)	60 (1,36)		6 (0,95)	5 (0,12)	
18-64 Years	4.777 (32,97)	964 (35,53)	1.935 (43,88)	13 (68,42)	181 (28,68)	1.155 (27,01)	93 (42,47)
65-85 Years	4.877 (33,66)	469 (17,29)	798 (18,10)	3 (15,79)	262 (41,52)	1.449 (33,89)	54 (24,66)
More than 85 Years	188 (1,30)	11 (0,41)	44 (1)	1 (5,26)	10 (1,58)	87 (2,03)	2 (0,91)
Not Specified	3.876 (26,75)	680 (25,06)	1.531 (34,72)	2 (10,53)	159 (25,20)	1.576 (36,86)	70 (31,96)
Totals	**14.490 (100)**	**2.713 (100)**	**4.410 (100)**	**19 (100)**	**631 (100)**	**4.276 (100)**	**219 (100)**

Table 2 – Patient Numbers and Mortality Rates by Leukemia Subtypes

Leukemia subtype	n	%	Total
AML	7.929	54.7	14.490
ALL	1.015	37.4	2.713
CML	1.472	33.3	4.410
CEL	3	15.7	19
CMML	245	38.8	631
CLL	1.261	29.4	4.276
HCL	22	10	219

Table 3 – The most frequently reported agents with their generic names

Drugs (in order of frequency)	Leukemia Subtype						
	AML	ALL	CML	CEL	CMML	CLL	HCL
Most frequent	Cyclophosphamide	Lenalidomide	Imatinib Mesylate	Imatinib Mesylate	Cyclophosphamide	Ibrutinib	Cladribine
2nd	Azacitidine	Cyclophosphamide	Nilotinib	Yellow fever vaccine	Azacitidine	Venetoclax	Adalimumab
3rd	Etoposide	Dexamethasone	Dasatinib	Hepatit A vaccine	Prednisone	Rituximab	Rituximab
4rd	Venetoclax	Methotrexate	Ponatinib	Lenalidomide	Lenalidomide	Cyclophosphamide	Cyclosporine
5rd	Lenalidomide	Blinatumomab	Cyclophosphamide	Bleomycin	Mycophenolate Mofetil	Lenalidomide	Infliximab

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Adult Hematology Abstract Categories

Coagulation Diseases
OP 02

MANAGEMENT OF BLEEDING IN A PATIENT WITH ACQUIRED HAEMOPHILIA A: A CASE REPORT

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Objective: Acquired haemophilia A (AHA) is a blood clotting disorder caused by the presence of autoantibodies that interfere with the function of factor VIII, often called factor VIII inhibitor (1). It has a prevalence of about one per million per year. Acquired haemophilia A is usually associated with autoimmune diseases, malignancies, skin disorders, drug interactions, and the postpartum period, and as many as 50% of cases have unknown causes (2). Bleeding often occurs under the skin (purpura/ecchymosis) and in soft tissues, and rarely in the joints (haemarthroses) (3). The presence of Factor VIII inhibitors causes a disruption in the intrinsic coagulation pathway, leading to prolongation of the activated partial thromboplastin time (APTT) parameter, which does not improve after mixing test, and has low Factor VIII activity (2). The management of patients with AHA aims to control bleeding and its complications and to eradicate factor VIII inhibitors. Immunosuppressive agents are usually used to eradicate factor inhibitors. In this study, we report a case of acquired haemophilia A presenting with spontaneous unprovoked bruising and discuss the approach to diagnosis and how to alert the clinician to suspect this potentially rare but devastating disease. **Case report:** A 67-year-old man presented to the emergency department with bruising on his left hand and right leg for approximately 10 days. The patient had no history of trauma. He had a history of hypertension and chronic obstructive pulmonary disease. Approximately 2 months prior to presentation, he had complained of bruising on his arms after taking medication (etodolac, ampicillin-sulbactam) (Figure 1). There had been no bleeding after the cholecystectomy. Physical examination revealed an anteroposterior diffuse haematoma extending from the right inguinal to the popliteal area and a haematoma on the dorsal aspect of the left hand (Figure 2). Other systemic examinations were normal. All laboratory results showed the initial complete blood count; normochromic anaemia, normal platelet count and prolonged activated partial thromboplastin time (APTT) with normal prothrombin time (PT). Liver and renal function tests were within normal limits. The test results showed very low factor VIII activity with normal von Willlebrand factor and fibrinogen levels (factor VIII activity: <0.4%). There was no improvement in the mixing test. The factor VIII inhibitor level was 96 Bethesda Units (BU). Workup for connective tissue disease and malignancy screening were otherwise negative. The patient's USG showed a $21 \times 20 \times 65$ mm haematoma in the muscle planes of the right thigh, which was drained by interventional radiology. The patient was then admitted to the haematology clinic and started on methylprednisolone at 1 mg/kg/day. However, recombinant factor VIIa followed by activated prothrombin complex concentrate was administered to the patient whose bleeding could not be controlled. In addition, the patient whose bleeding could not be controlled received three sessions of plasmapheresis every other day. After three weeks of steroid treatment, cyclophosphamide was added due to lack of response and treatment was continued for approximately 5 weeks. Factor 8 activity returned to normal after approximately two months and no inhibitor was detected after this period. **Conclusion:** Acquired haemophilia A (AHA) is a rare condition in which the body produces autoantibodies against factor VIII (1). Approximately half of cases are associated with a disease, and the others are idiopathic. The most commonly reported associations are autoimmune diseases, solid organ and lymphoproliferative malignancies, skin disorders, medications and pregnancy (2).Patients usually present with subcutaneous and mucocutaneous bleeding, followed by muscular, gastrointestinal, genitourinary and retroperitoneal bleeding (4). Our patient above presented with both subcutaneous and intramuscular haematomas.The first suspicion of this condition is usually based on a coagulation profile. This may show an isolated prolonged APTT ratio in a patient with unexplained bleeding. The platelet count will usually be normal. An isolated prolonged apTT raises two possibilities; either an absolute deficiency of intrinsic pathway coagulation factors, or the presence of antibodies or inhibitors to these factors (5). The BU test is performed to quantify the inhibitor titer and confirm the diagnosis. The stronger the inhibitor, the higher the BU (6). In general, a titer greater than 5 BU indicates a high titer inhibitor. Our patient had a reported inhibitor titer of 96 BU.Bypassing agents such as active recombinant factor VII have shown good results in stopping bleeding, while immunosuppressive drugs such as corticosteroids,

cytotoxic agents (cyclophosphamide, cyclosporine) and rituximab (anti-CD-20 monoclonal antibody) are often used to eradicate inhibitors (7).Our patient, who presented with diffuse bleeding in the right leg and left hand, was also difficult to treat due to high factor inhibitor level and was hospitalised for approximately one month.In conclusion, AHA should be recognised and treated rapidly, as delays in diagnosis can have serious consequences. In our patient, AHA was diagnosed rapidly and treatment and bleeding control were effective.

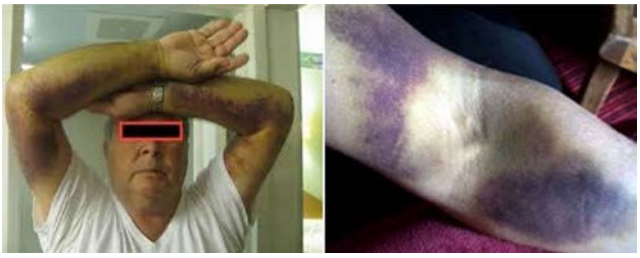

Figure 1: Ecchymosis on the forearms of both arms

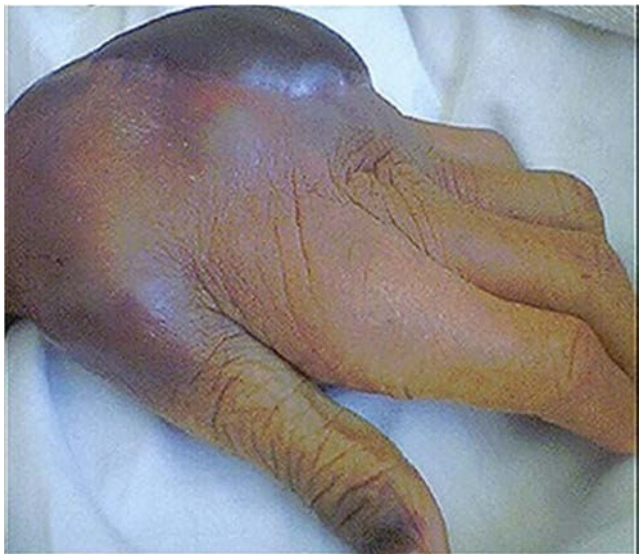

Figure 2:Ecchymosis on the dorsal left hand

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OP 03

NEWLY DIAGNOSED HEREDITARY FACTOR V DEFICIENCY IN A PATIENT PRESENTING WITH DEEP VEIN THROMBOSIS: A Rare Case

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Objective: Factor V (FV) is a crucial regulator of hemostasis, functioning as both a procoagulant and an anticoagulant glycoprotein within the coagulation cascade. In plasma, FV exists as an inactive precursor, which is activated by thrombin or factor Xa into its procoagulant form, FVa, contributing to the formation of the prothrombinase complex. Additionally, FV isoforms generated via alternative splicing, notably FV-short, exhibit anticoagulant properties by interacting with tissue factor pathway inhibitor-alpha (TFPIα), thus playing a role in regulating blood coagulation. Factor V deficiency is a rare condition characterized by a bleeding tendency, with a prevalence of approximately 1:1,000,000 in the general population. Clinical presentations can range from mild mucosal bleeding to severe hemorrhagic events. However, in rare cases, thrombotic complications may also occur, highlighting the heterogeneous clinical spectrum of FV deficiency. In this case report, we will discuss a patient who presented with deep vein thrombosis (DVT) and was diagnosed with FV deficiency. **Case report:** A 43-year-old female presented to the emergency department of Dicle University Hospital on July 21, 2024, with complaints of pain and swelling in her left leg. Physical examination and lower extremity venous Doppler ultrasonography revealed an echogenic thrombus within the distal iliac, femoral, popliteal, and proximal deep crural veins, leading to a diagnosis of deep vein thrombosis (DVT). Initial coagulation tests showed prolonged prothrombin time (PT) of 246 seconds, INR of 2.21, and activated partial thromboplastin time (APTT) of 38.2 seconds, with PT being more significantly prolonged. The complete blood count was normal. The patient was admitted to the cardiovascular surgery clinic for thrombolytic therapy and underwent thrombectomy and thrombolysis. Anticoagulant therapy with bemiparin sodium (HIBOR) was initiated. Due to abnormal coagulation tests, hematology consultation was requested. Further investigations showed normal lupus anticoagulant levels (1.16). Factor assays revealed a Factor V level of <6% (normal: 70-120%), while other factor levels were within normal limits. Anticardiolipin IgM and IgG were negative, and homocysteine was normal. APC resistance was measured at 0.64 seconds (normal: 0.91-1.19). Both Factor V Leiden and Factor II mutations were homozygous normal. Antithrombin III activity, as well as Protein C and S levels, were normal. ANA and anti-dsDNA tests were negative. A repeat Factor V level confirmed it remained <6%. The patient had no history of bleeding episodes and had not experienced bleeding complications during previous childbirths or minor surgeries. This case highlights the rare identification of Factor V deficiency in a patient presenting with deep vein thrombosis, an uncommon association, illustrating the complexity and variable clinical manifestations of Factor V deficiency. **Dıscussıon:** Factor V deficiency is a rare coagulopathy, typically characterized by a bleeding tendency, with an incidence of approximately 1:1,000,000 in the general population. The disease is inherited in an autosomal recessive manner and is caused by various mutations in the FV gene. As FV plays a critical role in both procoagulant and anticoagulant pathways, its deficiency usually manifests with symptoms such as mucosal bleeding, postoperative hemorrhage, and menorrhagia. However, paradoxically, some patients with FV deficiency have been reported to develop thrombotic events. In this patient, who presented with complaints of deep vein thrombosis, the absence of a bleeding history and lack of hemorrhagic complications during past surgical procedures highlights the

heterogeneous clinical presentation of FV deficiency. This supports the hypothesis that FV deficiency, due to its dual roles, may predispose not only to bleeding but also to thrombosis. Although the relationship between FV deficiency and thrombosis has not been fully elucidated, some potential mechanisms have been suggested. First, reduced TFPIα levels in patients with FV deficiency may disrupt the hemostatic balance, increasing the risk of thrombosis. Additionally, APC resistance observed in these patients could explain the hypercoagulability associated with FV deficiency. **Conclusion:** This case is significant in that it highlights the diagnosis of a rare Factor V deficiency in a patient presenting with deep vein thrombosis. While FV deficiency is typically characterized by a bleeding tendency, the predominance of a thrombotic complication in this case underscores the heterogeneous clinical course of this disorder and the challenges in its management. Although the development of thrombosis in patients with FV deficiency is rare, such cases emphasize the complexity of hemostatic balance and the necessity for individualized treatment approaches. Further case reports and a better understanding of the underlying mechanisms may lead to the development of more effective strategies for managing patients with FV deficiency.

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Adult Hematology Abstract Categories

Lymphoma
OP 04

EVALUATION OF THE IMPACT OF DEMOGRAPHIC DATA AND CLINICOPATHOLOGICAL RISK FACTORS ON TREATMENT RESPONSE AND SURVIVAL IN PATIENTS WITH PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA: A SINGLE-CENTER EXPERIENCE

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Objective: Primary central nervous system lymphoma (PCNSL) is a large B-cell lymphoma originating from specific regions such as the brain, spinal cord, and leptomeninges (1). The pathophysiology of PCNSL is not fully understood, but alterations in genes involved in the binding of immunoglobulins and B-cell receptors expressed in the central nervous system (CNS) and in NF-κB signaling are thought to play a central role (2,3). Other factors, such as T cells, macrophages/microglia, endothelial cells, chemokines, and interleukins, may also have important roles. The presenting symptoms of patients vary depending on the affected regions of the CNS (4). Standard treatment includes methotrexate-based polychemotherapy followed by age-adapted cytotoxic therapies and autologous stem cell transplantation (HDC-ASCT) (5,6). For patients ineligible for or unwilling to undergo transplantation, whole-brain radiotherapy (WBRT) or single-agent therapy may be used for consolidation (7). Personalized treatments, primary radiotherapy, or supportive care are options for patients with insufficient performance for treatment (8). Despite these treatments, 15-25% of patients do not respond to chemotherapy, and 25-50% relapse after an initial response. Although recurrence rates are higher in elderly patients, the prognosis of relapsed patients is poor, regardless of age (9). There is a need for further research to identify diagnostic biomarkers, develop more effective and less neurotoxic treatments, improve drug penetration into the CNS, and explore immunotherapies and adaptive cell therapies. **Methodology:** In this study, we aimed to evaluate the treatment responses and survival of patients with primary central nervous system lymphoma treated and followed at the Çukurova University Medical Oncology Clinic, based on their demographic data and clinicopathological risk factors. We reviewed the medical records of all lymphoma patients treated at our hospital, and 26 patients with central nervous system lymphoma were included in the study. We assessed the patients' age, gender, comorbidities, diagnosis dates, tumor locations, presenting symptoms, etiopathological factors, laboratory values, including baseline B2-microglobulin, IPI, and MSKCC scores at presentation. Pathology reports were evaluated for c-myc, Bcl-2, Bcl-6, and Ki-67 immunohistochemical markers, and FISH results, if available. The primary treatment options, treatment initiation dates, number of treatment cycles, best response, and its date were recorded. We also evaluated the radiotherapies received in addition to systemic chemotherapy. Disease progression, the date of progression, second-line treatments in case of progression, responses, and any autologous transplantation or maintenance therapies were documented. Survival outcomes, including progression-free survival and overall survival, were analyzed in relation to clinicopathological risk factors. **Results:** A total of 26 patients, 13 (50%) female and 13 (50%) male, were included in the study. The mean age was 56 (min 26- max 90). The most common comorbidity was hypertension. Regarding tumor localization, 8 patients had frontal lobe involvement, the most frequent site. The most common presenting symptoms were headache and seizures. At diagnosis, all patients required steroids, and 11 patients required antiepileptic drugs, while only 2 patients did not. Histopathological verification was performed in all patients, with all cases reported as diffuse large B-cell lymphoma. Only 1 patient had a history of hepatitis C as an etiological factor. Based on MSKCC scores at diagnosis, 8 patients were high-risk (score 3), 8 were intermediate-risk (score 2), and 8 were low-risk (score 1). Immunohistochemical analysis showed that c-myc was overexpressed in 10 patients (above 40%). Bcl-2 was positive in 12 patients, and Bcl-6 was positive in 19 patients. Five patients were triple expressors, and five were double expressors. Ki-67 ranged from 25 to 100, with 21 patients showing Ki-67 levels above 70% and 3 patients with levels above 95%. Pre-treatment laboratory tests revealed normal albumin levels in only 4 patients, while the majority had hypoalbuminemia. LDH levels were above the upper limit in

16 patients, and 3 patients had levels three times the normal limit. Inflammatory markers, including CRP and ESR, were elevated in 17 patients. The most commonly used first-line treatments were high-dose methotrexate with rituximab in 6 patients, methotrexate-rituximab-temozolomide (MTR) in 4 patients, and the MATRix protocol (methotrexate, cytarabine, thiotepa) in 3 patients. Radiotherapy, including whole-brain irradiation, was administered in 8 patients during or after first-line treatment. Ki-67 reached statistical significance when evaluating overall survival and progression-free survival with clinicopathological risk factors. No statistical significance was found for other pathological and clinical laboratory values. **Conclusion:** CNS lymphoma is a rare type of cancer that develops in central nervous system (CNS). PCNSL comprises ~4% of all primary CNS tumors. There are only about 1,500 new cases of CNS lymphoma diagnosed in each year. It occurs most often in people over 50, with the average age of diagnosis being 65. In our study, the average age of our patients was younger than the literature, and our average age was 56. It's slightly more common in men. People with HIV or AIDS and other immunodeficiencies are more likely to receive a CNS lymphoma diagnosis. Symptoms depend on where your tumor is located. A tumor is a mass of cancer cells. For instance, CNS lymphoma likely won't cause symptoms if the tumor's located in the membrane covering your brain and spinal cord. In contrast, a tumor near one or both eyes often causes vision changes. If the mass occurs near the area of your brain that controls movement, you could have weakness or coordination changes. Symptoms of CNS lymphoma may include: nause and vomiting, hearing loss, weakness in arms, legs or face, weakness affectşng one side of body, headaches, confusion, seizures. The most common reasons for admission of the patients included in our study were headache, unilateral weakness in the body and seizure. The brain parenchyma is the most common location. In our study, similar to the literature, the location of the tumors in all our patients was the brain parenchyma. Our study's findings were consistent with the literature regarding histology. However, we did not demonstrate a correlation between high-risk factors such as elevated LDH, performance scores, and double or triple expression with survival outcomes. Nevertheless, we confirmed the prognostic and predictive importance of Ki-67, in line with the literature. The lack of statistical significance for other prognostic factors may

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OP 05

RICHTER TRANSFORMATION OF CLL DISEASE: A CASE REPORT WITH CENTRAL NERVOUS SYSTEM INVOLVEMENT

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Objective: Richter transformation (Richter syndrome) is defined as the transformation of chronic lymphocytic leukaemia (CLL) into an aggressive lymphoma. Richter transformation is estimated to occur with a rate of 5-10% (1). In this article, we aimed to present a case of Richter transformation with central nervous system (CNS) involvement. **Case report:** In 2018, a 64-year-old woman who presented with lymphocytosis underwent flow cytometry examination and was diagnosed with chronic lymphocytic leukaemia (CLL). 6 cycles of Rituximab + Bendomustine treatment was administered. In 2024, the patient was admitted to the neurosurgery outpatient clinic with complaints of balance disorder, slowing of speech and facial slippage, and lesions were detected in the periventricular area at the level of basal ganglia in the brain (Figure 1). CSF examination did not reveal any findings in favour of lymphoma. A biopsy was taken from the intracranial mass. The biopsy result was reported as high-grade B- cell lymphoma. Transition from CHL to lymphoma was evaluated as Richter transformation. On PET CT examination, a 13*11 mm hyperdense lesion at the level of the left basal nucleus nucleus lentiformis, showing intense hyper metabolic activity compared to the surrounding parenchyma, showed central nervous system involvement of lymphoma. The patient was interned to the BMT ward and MATRIX protocol containing high-dose Ara-C and high-dose methotrexate with high CNS transmission was applied for a total of 3 cycles. Control brain imaging showed regression of the mass lesion observed in the previous examination. **Conclusion:** Central nervous system (CNS) infiltration is rare in Richter syndrome (RS). It has only been discussed at the case level (2). Various symptoms including headache, convulsions, diplopia, ataxia, facial paralysis and cognitive dysfunction are observed in these patients (3). In our patient, neurological findings including balance disorder, slowing of speech and facial slipping were observed. Central nervous system involvement was diagnosed by brain biopsy. When the literature is analysed, CNS involvement in these patients is very rare and usually demonstrated by CSF analysis. In a few patients, the diagnosis was made by brain biopsy as in our patient (3). In the literature, no optimal treatment has been reported in patients with Richter transformation with CNS involvement. Negative results have been shown despite treatments including high dose Methotrexate and Rituximab (1,2,3). In our case, successful results were obtained with MATRIX -C protocol including high dose Ara-C and high dose methotrexate. As a result of this treatment, regression was observed in control brain imaging. CONCLUSION: Richter transformation with CNS involvement is a rare but life-threatening condition. Close follow-up in the course of CLL, early diagnosis and initiation of appropriate chemotherapy may be life-saving. References: 1. PRONELLO, Edoardo, et al. Richter's syndrome of the central nervous system. Canadian Journal of Neurological Sciences, 2021, 48.6: 889-892. 2. Xu L, Song J Ch, Xiu H S, and et al. Richter's syndrome of the central nervous system diagnosed concurrently with chronic lymphocytic leukaemia: A case report and literature review. Medicine (Baltimore). 2018 Oct;97(41): e12701. 3. Nakanishi T, Ito T, Fujita Sh, etal. Refractory Chronic Lymphocytic Leukemia with Central Nervous System Involvement: A Case Report with Literature Review. J Blood Med. 2020; 11: 487–502.Figure 1: Intracranial mass appearance on computed tomography of the brain (marked with red colour)

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Adult Hematology Abstract Categories

Myeloma
OP 06

A TALE OF THE CRUMBLING AMYLOID WALL: BREAKING THROUGH LIVER STIFFNESS IN AL AMYLOIDOSIS

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Objective: Systemic AL amyloidosis is characterized by the deposition of misfolded amyloid fibrils in tissues, produced by clonal plasma cells. Daratumumab, a human IgG kappa-type monoclonal anti-CD38 antibody, is expressed on the surface of plasma cells, hematopoietic stem cells, regulatory T and B cells, monocytes, and dendritic cells. Due to this broad range of activity, daratumumab is thought to improve organ responses in AL amyloidosis through direct effects on tumor cells and via immunomodulatory mechanisms, providing additional therapeutic benefits. FibroScan, a noninvasive method for measuring liver stiffness, is routinely used today in the diagnosis and follow-up of chronic liver diseases. One condition that increases tissue stiffness is the accumulation of amyloid deposits in tissues. Various studies suggest that it can be useful in diagnosis when tested for this purpose. We aim to present two cases demonstrating that FibroScan can be a valuable tool not only in diagnosis but also in monitoring the progression of the disease. **Case report:** Case 1 A 53-year-old male patient was referred to our clinic after an incidental finding of M protein (2 g/dl) on serum protein electrophoresis requested at the Neurology Clinic, where he was being followed for epilepsy. An IgG lambda-type paraproteinemia was documented by immunofixation electrophoresis. His tongue was slightly noticeably enlarged. With suspicion of AL amyloidosis abdominal fat aspiration was performed, which revealed amyloid existence by Congo red stain positivity. He has no other organ involvement symptoms and signs but the liver was greater than normal size being 17 cm in the mid-clavicular line. The serum alkaline phosphatase (ALP) level was within normal limits. The liver elastography (FibroScan) result was 9 kPa, consistent with moderate scarring. He was monitored without intervention. Three years later when he developed peripheral neuropathy-related symptoms, AL amyloidosis management was decided. The liver size was similar and serum ALP level was still normal but the FibroScan result changed to severe scarring as being 9.1 kPa. Case 2 A 60-year-old female patient presented with a 20 kg weight loss over one year and chest pain. Imaging revealed diffuse infiltrates in the lungs. A bronchoscopy biopsy was consistent with AL amyloidosis. The patient had parenchymal lung involvement, anemia (Hb 9.7 g/dL), and an interventricular septal diameter (IVSD) of 1.5 cm. She was classified as Mayo 2012 stage 1 and Palladini renal stage 1. At diagnosis, her ALP level was 308 IU/L (laboratory upper limit: 130 IU/L) and her Fibroscan result was 51.2 kPa. The patient was started on daratumumab, bortezomib, cyclophosphamide, and dexamethasone therapy. After 18 months of monthly daratumumab treatment, follow-up measurements showed an ALP of 221 IU/L and a Fibroscan of 9.1 kPa. During the same period, hematological response was assessed as a very good partial response (dFLC: 19.6 mg/L), and NT-pro BNP decreased from 1558 to 512 pg/ml **Conclusion:** In the first case, liver stiffness measurements remained nearly stable over two years with a slight increase during clinical progression. In the second case, despite stage I cardiac and renal involvement, liver stiffness was very high and showed a striking reduction after treatment. Thus, liver stiffness may be an occult sign of liver involvement and may provide insights for monitoring disease progression

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OP 07

A SINGLE-CENTER REAL-LIFE EXPERIENCE WITH FIRST-LINE DARATUMUMAB, BORTEZOMIB, CYCLOPHOSPHAMIDE, AND DEXAMETHASONE (DARA-VCD) IN AL AMYLOIDOSIS

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Case Report: Systemic amyloidosis results from the production of misfolded immunoglobulin light chains by monoclonal CD38 + plasma cells. These misfolded light chains form amyloid fibrils, which accumulate in various tissues and cause organ damage. Following the results of the Phase 3 ANDROMEDA study, where the addition of daratumumab, an anti-CD38 agent, to first-line treatment showed favorable outcomes, Dara-VCD has become a standard first-line therapy. In this study, we compared the outcomes of patients with AL amyloidosis who were treated with first-line Dara-VCD in our clinic to those treated with other triplet regimens. **Methodology:** Patient's data with AL amyloidosis followed between 2010 and 2024 were retrospectively reviewed from the institution's database. Two groups were established patients treated with Dara-VCD and those without Dara. The clinical characteristics and response criteria were compared using SPSS 21. **Results:** A total of 52 patients were included in the study, with a mean age of 60 ± 10 years for the entire group. There was no statistically significant difference in the demographic distribution between the groups ($p = 0.003$). The median follow-up period was 32 months (1-114 months). In 27 (51.9%) patients, cardiac involvement was present, and 26

(50%) had renal involvement. The stages of these involvements are summarized in Table 1. In the group treated without Dara, the triplet regimens were VCD (n=30), VRD (n=3), and VMP (n=2). Mortality was significantly lower in the Dara-VCD group. When evaluating responses, progression was only in 1 (9%) patient in the Dara group, whereas in 8 (32%) in the without Dara group. The overall survival was not statistically significant between the two groups (log-rank p=0.394). (Figure 1). **Conclusion:** We used Dara after Health Authority approval and reimbursement in our country. So, we get the opportunity to compare Dara-added VCD effectiveness to VCD or VRD as a real-life analysis. Dara-VCD resulted in a significantly lower rate of progression and mortality compared to those without Dara. The follow-up duration was shorter for comment on overall survival. Additionally, 10 patients without the Dara group, did receive daratumumab with VCD (n=5), or with other agents (n=5)). With this study, we documented from a real-life experience addition of daratumumab to the VCD regimen in first-line treatment reduces mortality and progression in AL amyloidosis.

Table 1 – Patient Characteristics

	Dara-VCD (n=17)	Other Triplet Regimens (n=35)	P-value
Age (mean ± std)	65±6	57±11	**0,003**
Gender (F/M)	10 (%58.8)/7 (%41.2)	14 (%40)/21 (%60)	0,202
Median follow-up (months)	15(1-68)	36 (1-114)	0,108
ECOG performance score >2	7 (%43.8)	11 (%33.3)	0,273
Mayo 2012 Staging System			0,954
Stage 1	6 (%37.5)	10 (%29.4)	
Stage 2	3 (%18.8)	7 (%20.6)	
Stage 3	5 (%31,3)	12 (%35,3)	
Stage 4	2 (%12.5)	5 (%14.7)	
Palladini et al. Staging System			0,166
Stage 1	7 (%43.8)	18 (%51,4)	
Stage 2	7 (%43.8)	7 (%20)	
Stage 3	2 (%12.5)	10 (%28,6)	
dFLC (mg/L)	106,5 (4-1945)	95 (0-2425)	0,624
hs Pro BNP (median)	1769 (25-30117)	1184 (17-25113)	0,4
eGFR (mL/min)	71 (2-106)	85 (9-124)	0,264
ASCT	3 (%17,6)	12 (%34,3)	0,214
Mortality	3 (%17,6)	18 (%51,4)	**0,02**
Treatment Response (Hematologic)			**0,042**
VGPR and above	8 (%72,7)	7 (%28)	
SD	2 (%18,2)	10 (%40)	
Progression	1 (9,1)	8 (%32)	

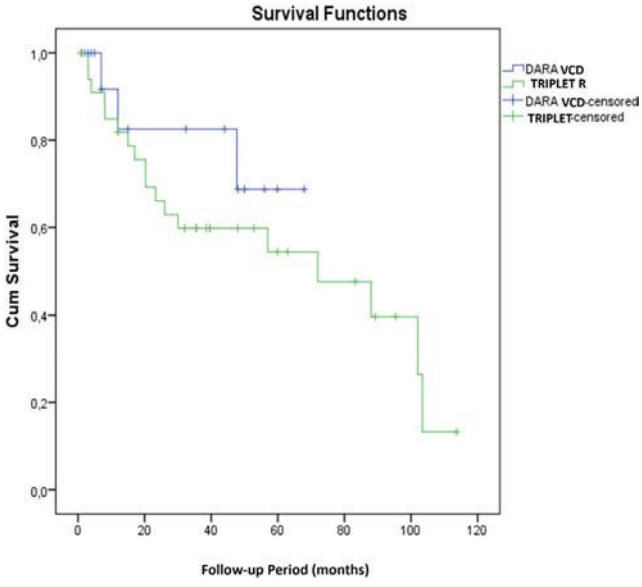

Figure 1: Overall Survival in Dara-VCD and without-Dara Triplet Treatment Groups

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OP 08

FROM MULTIPLE MYELOMA TO ACUTE MYELOID LEUKEMIA

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Objective: Multiple myeloma (MM) and acute myeloid leukemia (AML) are malignant clonal diseases of cells in different lineages. Only 79 cases of the two diseases occurring together have been reported in Pubmed in the last 10 years. However, simultaneous occurrence of MM and AML on presentation in chemotherapy-naive patients is rare, with only a 25 cases reported in the literature so far. [(1)]This case presents our experience with a patient who was diagnosed with AML shortly after the diagnosis of MM. **Case report:** A 57-year old male patient was referred to hematology due to pancytopenia. Serum immunofixation confirming monoclonal gammopathy of IgG kappa was detected. ß-2 microglobulin was found as 3,56 mg/dL. All routine tests required for MM diagnosis and follow-up were performed. (table 1) Bone marrow biopsy showed 40% plasma cell infiltration stained with CD38, CD138 and kappa. PET/CT scan revealed lytic lesions in the bones. t(4;14) was found positive in fluorescence in situ hybridization analysis. Bortezomib, lenalidomide, dexamethasone (VRD) regimen was started. After 4 cycles of VRD, the patient was hospitalized due to febrile neutropenia and severe dyspnea. Pulmonary embolism and pneumonic infiltration were not detected in thorax CT. However; bilateral septal edema and pleural effusion up to 3,5 cm were detected. Pleural fluid sampling was performed. No infectious agent was detected in exudative effusion. 3,25% myeloid blasts, 1,99% plasma cells were found by flow cytometry of pleural fluid. (figure 1) A bone marrow biopsy was performed again due to blasts in the pleural fluid results. Biopsy showed 40% myeloid blasts (CD117 and CD34) and 18% plasma cells in the bone marrow parenchyma. (figure 2) We decided to treat the patient with 7+3 induction chemotherapy (Idarubicin and cytarabine) with daratumumab and dexamethasone (Dara-d). After induction and one course of dara-d, bone marrow biopsy was performed again to evaluate response. The patient could not achieve remission and died due to acute respiratory failure. **Results Conclusion:** Multiple myeloma (MM) and acute myeloid leukemia (AML) may usually develop in the same patient but they are generally seen in MM patients receiving chemotherapy and in due course of treatment AML develops. (2) Presence of AML with MM in a shortly after treatment begins is an extremely rare occurrence. Concurrent diagnosis of these two hematological malignancies yields a poor prognosis. (3)References:(1) Jamal I, Shuchismita S, Choudhary V. Twin Malignancy of Acute Myeloid Leukemia and Multiple Myeloma in a Chemotherapy-Naïve Patient: A Rare Occurrence. J Lab Physicians. 2022 Oct 20;15(2):306-310. doi: 10.1055/s-0042-1757588. PMID: 37599817; PMCID: PMC10437150.(2) Parapia L, Abbott CR, Masters G, Roberts BE. Simultaneous pre

sentation of acute myelomonocytic leukaemia and multiple myeloma. Acta Haematol 1982;68(02):153–156 (3) Annino L, Martino P, Barsotti P, Serra P, MArinozzi V, Mandelli F. Multiple myeloma and acute myelomonocytic leukemia: simultaneous occurrence without previous chemotherapy. Acta Haematol 1980;64:195–200

Table 1 – Laboratory and bone marrow biopsy findings of the patient at the time of diagnosis

Laboratory tests	Results	Normal Value
Hemoglobin	8,00 g/dL	12,1 - 16,6
Total leukocyte count	2,51 × $10^3/\mu$L	3,46 - 10,04
Platelets	76 × $10^3/\mu$L	172-380
Creatinine	0,86 mg/dL	0,7 - 1,2
Serum immunoglobulin G	57,82 g/L	7-16
ß-2 microglobulin	3,56 mg/dl	-
Serum kappa free light chain	243	17-37
Serum lambda free light chain	10,8	9-21
Bone marrow plasma cell percentage	%35-40	

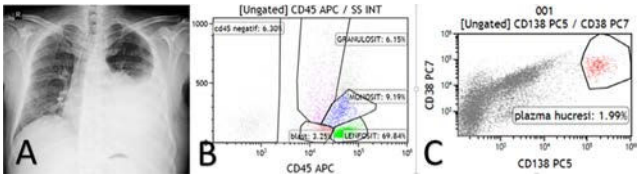

Figure 1: (A) Chest X-ray showed pleural effusion. (B) Pleural fluid was positive for myeloid blasts. (C) Plasma cell persentage of pleural fluid.

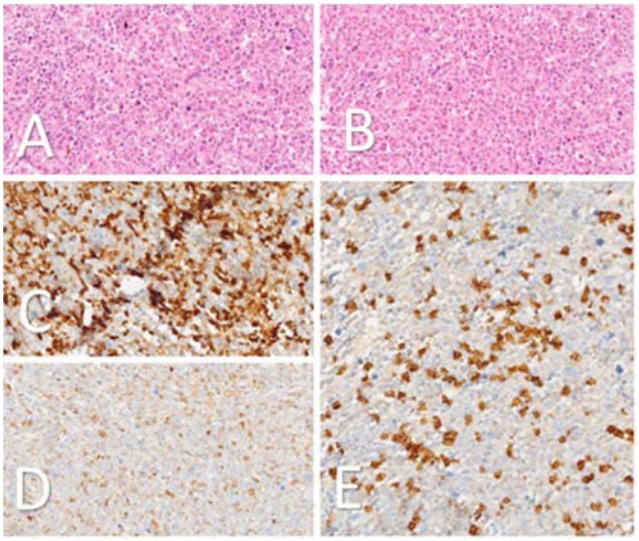

Figure 2: (A) Bone marrow biopsy, H & E stain × 40. The bone marrow is hypercellular. (B) Bone marrow biopsy, H & E stain × 40, The number of normal hematopoietic elements is markedly increased, the infiltrate consists of plasma vcells and blasts. (C) Approximately 40% CD34 staining in the bone marrow parenchyma. (D) CD117 staining cells are 18% of the mrrow. (E) Number of cells stained with CD138, 18% of parenchyma.

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OP 09

CASE REPORT: SIMULTANEOUS OCCURRENCE OF PLASMA AND B CELL MALIGNANCY

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Objective: Multiple myeloma (MM) and chronic lymphocytic leukemia (CLL) are two distinct hematological malignancies thought to arise at different stages of the B cell maturation pathway. Here, we aimed to present our approach to such a patient. **Case report:** A 59-year-old male patient was examined for hematuria in 2019, lymphocytosis was detected, and flow cytometry (FC) was performed. The result was found to be compatible with CLL. The patient was evaluated as Binet A, Rai 0 at the diagnosis, and was followed without treatment. In the fourth year of treatment-free follow-up, the patient developed severe B symptoms and widespread lymphadenopathies (LAP), splenomegaly (size 15.5 cm) on imaging, and shortened lymphocyte doubling time, so bone marrow aspiration biopsy (BMAB), FC and cytogenetic tests were performed. The patient had a CLL immunophenotype score of 1 in flow cytometry, and cytogenetics showed negative 17p del and TP53 mutations. In BMAB, 80% atypical morphology and immunohistochemical (IHI) examination showed small lymphoid cells with CD19(+), CD20(+), CD23(+), and CD5(+) staining. The patient was evaluated as Binet B, Rai 2, and got 6 cycles of Chemoimmunotherapy (Rituximab, Fludarabine, Cyclophosphamide). After treatment, B's symptoms regressed, and LAP and splenomegaly returned to normal. The patient developed neutropenia requiring granulocyte colony-stimulating factor (G-CSF) during follow-up, therefore, the patient underwent repeat BMAB. In the result, plasma cells with intense kappa positive staining were observed, and in the IHI examination, the CD38 and 138 positivity rates were evaluated as 20%. The patient, who did not have hypercalcemia, renal dysfunction, anemia, bone lesions, and extramedullary involvement, was assessed as MGUS, neutropenia resolved spontaneously during follow-up, and it was decided to follow the patient at three-month intervals without treatment. **Conclusion:** MM and CLL were rare in the same patient, and there is limited information regarding clinical outcomes and management. The clonal relationship between them is controversial.

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OP 10

THE PROGNOSTIC ROLE OF WHOLE BLOOD VISCOSITY AND BONE MARROW FIBROSIS IN PREDICTING SURVIVAL OUTCOMES IN NEW DIAGNOSIS MULTIPLE MYELOMA PATIENTS

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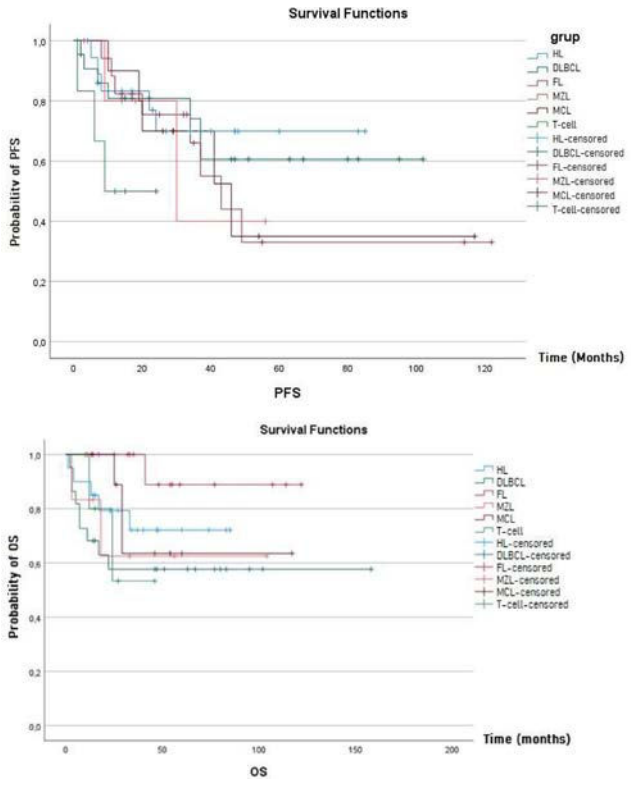
Objective: This study aimed to evaluate the prognostic role of whole blood viscosity and bone marrow fibrosis in predicting survival outcomes and relationships with prognostic predictors, such as international scorin system albumin levels, beta2-microglobulin, total protein, albumin and lactate dehydrogenase in newly diagnosed multıple myeloma patients. **Case report:** Methodology We retrospectively evaluated 108 patients diagnosed with multıple myeloma between 2015-2022. Whole blood viscosity was calculated using the Simone formula, incorporating the haematocrit and total protein values. Bone marrow fibrosis was graded as mild (2), significant (3), or advanced. Comparisons of grade 0-3 bone narrow fibrosis and high-low calculated whole blood viscosity groups in terms of overall survival were conducted using the Kaplan-Meier survival curve and log-rank test. **Results:** The median follow-up period was 16 months, and 57.4% of patients died during follow-up. The median overall survival was 26 months. The calculated whole blood viscosity (c-WBV) value predicted mortality with 88.7% sensitivity and 45.7% specificity. Patients with a high c-WBV (≥17.14 208 mPa-s) had significantly lower one- and two-year survival rates than those with a low c-WBV (<17.14 208 mPa-s) (p<0.001). Bone narrow fibrosis was inversely related to survival, with higher grades being associated with lower survival rates. The two-year expected survival time respectively bone narrow fibrosis 2 and 3 was determined to be 56.7% and 43.6% 41.4% and 23.3% (p<0.001). This study highlights the potential of whole blood viscosity and bone narrow fibrosis as prognostic markers in patients with newly diagnosed multıple myeloma patients. **Conclusion:** Incorporating these parameters into the existing staging systems may enhance prognostic prediction and guide treatment decisions. Further prospective studies are warranted to validate these findings and explore the mechanistic links between whole blood viscosity, bone narrow fibrosis, and MM pathophysiology.



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Adult Hematology Abstract Categories

Stem Cell Transplant
OP 11

SURVIVAL OUTCOMES OF AUTOLOGOUS STEM CELL TRANSPLANTATION IN LYMPHOMA PATIENTS

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[2] *Bezmialem Foundation University, Faculty of Medicine, Hematology Department*
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Objective: Lymphomas, a diverse group of hematological malignancies, vary significantly in their prognosis, survival outcomes and response to treatment. High-dose chemotherapy followed by autologous stem cell transplantation (ASCT) has been frequently used to treat patients with relapsed or refractory lymphoma, offering a potential for long-term remission. However, survival outcomes after ASCT can differ substantially depending on the type of lymphoma. This study aims to compare survival outcomes across six different lymphoma subtypes—Hodgkin's lymphoma (HL), diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL), marginal zone lymphoma (MZL), mantle cell lymphoma (MCL), and T-cell lymphoma—in patients who have undergone autologous stem cell transplantation. While most reported data in the literature focus on a single lymphoma subtype, this study examined multiple subtypes within a single center, allowing for a direct comparison of survival outcomes. This study also aimed to compare these outcomes with survival and relapse rates reported in the literature, identifying potential areas for further investigation into the underlying causes of observed differences. **Methodology:** This retrospective study took place at Bezmialem Vakif University Hospital, İstanbul, Turkey. Medical records were reviewed of 81 patients from six

different lymphoma subtypes who underwent autologous stem cell transplantation (ASCT) between January 2012 and December 2023. We included 20 HL, 22 DLBCL, 17 FL, 6 MZL, 10 MCL, and 6 T-cell lymphoma patients. Lymphoma diagnoses were confirmed through pathology reports. Data were collected on each patient's age, sex, time of post-transplant relapse, time of death and last follow-up visit from patient records. Only patients who followed up at least 12 months after the ASCT were included for analysis. For survival analysis, research will evaluate overall survival (OS) and progression-free survival (PFS). PFS was defined as the time from transplantation to disease progression, relapse, or death from any cause, while OS was defined as the time from transplantation to death or the last follow-up. PFS and OS were calculated using the Kaplan-Meier method, and survival curves were compared using the log-rank test. Cox proportional hazards regression was used to evaluate the effect of age, sex, and lymphoma subtype on both PFS and OS. A p-value of less than 0.05 was considered statistically significant. Univariate and multivariate logistic regression were used to check how other factors might affect survival outcomes. **Results:** A total of 81 patients' characteristics are summarized in Table 1. Patients aged between 18 and 79 years, with a mean age of 45.79±16.01. A significant age difference was found between HL and other groups and between DLBCL and MCL patients ($p < 0.05$). 2-year PFS was %72.4 [Standart Error (SE)=%5.3] and OS was %77.6 (SE=%4.8) The estimated mean PFS for the six groups analyzed was 72.45±6.73(SE) months (95% CI 59.25%-85.65%) and the mean OS was 114.03±7.91 (SE) months (95% CI 98.51%-129.55%)(Table 2). When comparing the 2-year PFS for HL, DLBCL, FL, MZL, MCL, and T-cell results were 69.9% (SE=0.114), 80.9% (SE=0.086), 75.5% (SE=0.107), 80% (SE=0.179), 70% (SE=0.145), and 50% (SE=0.204) and 2-year OS were 79.3% (SE=0.092), 57.7% (SE=0.108), 100% (SE=0), 62.5% (SE=0.213), 88.9% (SE=0.105) and 53.3% (SE=0.248) respectively. When we compared PFS and OS durations among the groups, DLBCL had the best PFS with 70.2 months (SE = 9.59, 95% CI 51.4% –89%), while T-cell lymphoma had the worst PFS with 14.66 months (SE=3.92, 95% CI 6.96%–22.36%). For OS, the group with the best outcome was FL with 113 months (SE =8.48, 95% CI 96.36%–129.63%), and the worst outcome was T-cell lymphoma with 33.33 months (SE = 6.76, 95% CI 20.083% –46.583%)(Table 2). No significant differences in PFS ($p = 0.311$) or OS ($p = 0.263$) were observed between the groups based on the log-rank test, indicating no statistically meaningful variation in survival between the lymphoma subtypes. Cox regression analysis, adjusted for age and gender, revealed a significant difference in PFS between Hodgkin lymphoma and T-cell lymphoma ($p = 0.020$). However, no significant difference was found in OS (Table 3). Univariate and multivariate logistic regression analyses did not reveal any statistically significant differences between the groups. **Conclusion:** Our study revealed significant differences in survival rates among some groups. T-cell lymphoma patients had worse outcomes for both PFS and OS, while DLBCL showed the best PFS, and follicular lymphoma showed the best OS. Understanding these varying survival expectations after autologous transplantation in different lymphoma types can help identify strategies to improve success rates for those with shorter survival durations. When comparing our study to previous research, both similarities and differences were identified. For Hodgkin's lymphoma, our 5-year PFS was 69.9% and OS was 72.1%, they were higher compared to the 48% PFS and 53% OS reported by Majhail et al. The differences in subtype distribution, with 65% nodular sclerosis and 15% mixed cellular in our cohort compared to 87% and 8% in their study, may have contributed to this variance. For DLBCL, our 5-year PFS was 60.6%, which surpassed the 42.8% reported by Tun et al., possibly due to the younger average age in our cohort (45 vs. 59 years). For follicular lymphoma, the OS was observed to be much higher compared to other studies and to PFS. This may be due to the quick diagnosis and treatment processes in our clinic or the uneven distribution of the sample group. For other lymphoma subtypes, our findings were generally consistent with the literature. The primary limitation of our study is the small sample size, which likely influenced some of the observed differences. The absence of data on patients' risk factors and disease status at the time of ASCT is another

Table 1 – Patient Characteristics

	HL	DLBCL	FL	MZL	MCL	T-cell	Total
No. of patients	20	22	17	6	10	6	
Sex							
Male, *n(%)*	11 (55%)*	14 (63.6%)*	5 (29.4%)*	0*	8 (80%)*	2 (33.3%)*	40 (49.4%)*
Female, *n(%)*	9 (45%)*	8 (36.4%)*	12 (70.6%)*	6 (100%)*	2 (20%)*	4 (66.7%)*	41 (50.6%)*
Age							
Mean± Standard Deviation	33.15±15.160**	45.14±12.981**	49.59±11.587**	54.83±8.998**	55.60±14.065**	54.17±24.302**	
Median [Q1-Q3]	27[20-46]**	48[38.5-52.5]**	52[41-58.5]**	54[46.75-64.5]**	59.5[50.75-65]**	58[27.75-76]**	
Disease status after ASCT							
Progression, *n (%)*	5 (25%)	7 (31.8%)	8 (47.05%)	2 (33.33%)	5 (50%)	3 3 (%50)	30 (37%)
Mortalities, *n(%)*	5 (25%)	9 (40.9%)	1 1 (5.88)	2 (33.33%)	3 (30%)	2 (33.33%)	22 (27.2%)

HL Hodgkin Lymphoma, *DLBCL* Diffuse Large B-cell Lymphoma, *FL* Follicular Lymphoma, *MZL* Marginal Zone Lymphoma, *MCL* Mantle Cell Lymphoma, *ASCT* Autologous Stem Cell Transplantation, *p=0.008, **p<0.001

Table 2 – Mean for Survival

Subtypes	PFS Mean				OS Mean			
	Estimate	Std. Error	95% CI		Estimate	Std. Error	95% CI	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
HL	63.640	8.071	47.821	79.460	65.546	7.501	50.844	80.248
DLBCL	70.205	9.593	51.402	89.008	94.927	16.105	63.361	126.492
FL	60.899	13.367	34.700	87.098	113.000	8.485	96.369	129.631
MZL	36.200	9.543	17.495	54.905	69.250	19.674	30.689	107.811
MCL	61.075	15.882	29.947	92.203	84.429	15.081	54.870	113.988
T-cell	14.667	3.928	6.969	22.365	33.333	6.760	20.083	46.583
Total	72.452	6.735	59.252	85.652	114.038	7.918	98.519	129.557

HL Hodgkin Lymphoma, *DLBCL* Diffuse Large B-cell Lymphoma, *FL* Follicular Lymphoma, *MZL* Marginal Zone, Lymphoma, *MCL* Mantle Cell Lymphoma

Table 3 – Cox Regression for PFS and OS

	PFS				OS			
			95% CI				95% CI	
	p	HR	Lower	Upper	p	HR	Lower	Upper
age	.311	.986	.959	1.013	.793	1.004	.974	1.035
group	.290				.423			
HL-DLBCL	.515	1.516	.432	5.317	.365	1.733	.527	5.703
HL-FL	.251	2.059	.600	7.062	.143	.190	.021	1.754
HL-MZL	.357	2.377	.376	15.011	.805	1.263	.199	8.015
HL-MCL	.194	2.523	.624	10.199	.954	.954	.193	4.710
HL-T-cell	.020	7.663	1.385	42.389	.635	1.528	.265	8.805
sex	.743	1.146	.507	2.591	.851	1.096	.419	2.871

HL Hodgkin Lymphoma, *DLBCL* Diffuse Large B-cell Lymphoma, *FL* Follicular Lymphoma, *MZL* Marginal Zone Lymphoma, *MCL* Mantle Cell Lymphoma, *CI* Confidence Interval, *HR* Hazard Ratio

limitation. However, the strength of our study is the ability to compare six lymphoma subtypes within the same study. Further research is needed to focus on larger patient cohorts and incorporate detailed evaluations of risk factors in patients undergoing autologous transplantation.

https://doi.org/10.1016/j.htct.2024.11.012

OP 12

RESULTS OF UNRELATED ALLOGENEIC STEM CELL TRANSPLANTATION: A SINGLE CENTER EXPERIENCE

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Objective: Evaluation of data from unrelated hematopoietic stem cell transplants performed in our transplant center. **Methodology:** At the Private Emsey Hospital Adult Stem Cell Transplantation Unit were evaluated retrospectively between 2016 and 2023 to Allogeneic hematopoietic stem cell transplantations performed on 76 patients with different diagnoses from unrelated donors. **Results:** Data of patients with a mean age of 41.9 years were retrospectively analyzed. All donors were from a Turkish stem cell bank and 51% had HLA 1 allele incompatibility. 28 transplants were performed between different genders. Average follow-up was 17.3 months. Neutrophil engraftment occurred in an average of 18.1 days. Acute GVHD was detected in 26% and chronic GVHD in 41%. 1-year overall survival was 37% and disease-free survival was 32%. **Conclusion:** Non-relative stem cell transplantation is an important option especially in hematological diseases where there is no family donor and allogeneic transplantation is required. It has been observed that non-relative data performed in our clinic are similar to data from other centers.

https://doi.org/10.1016/j.htct.2024.11.013

OP 13

MANTLE CELL LYMPHOMA PATIENT WITH SKIN GVHD AFTER AUOTOLOGOUS STEM CELL TRANSPLANT

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Objective: Graft-versus-host disease (GVHD) after ASCT is an immunologically developing process. T cells and inflammatory cytokines formed against the recipient'ss alloantigens are responsible for this. It is less common in autologous SCT than in allogeneic SCT. It has been reported in the literature that there are MM patients who developed autologous GVHD after Auotologous SCT. **Case report:** Here, we present a case

of mantle cell lymphoma who developed autologous GVHD after ASCT, not previously reported. Fifty-four-year-old male patient was diagnosed with Stage 4A Mantle cell lymphoma according to the Ann Arbor staging system based on the result of inguinallymph node excisional biopsy performed in July 2021. Three courses of R-CHOP,DHAP treatment was started for the patient who did not respond after R-CHOP treatment. Complete response was achieved after three cycles of R-DHAP therapy,and mobilization was performed with filgrastim and plerixafor protocol. Then, autologous SCT was performed with the BEAM protocol(Karmustine 300mg/m2, Etoposide 200mg/m2, Cytosine Arabinoside 2×100mg/m2, Melphalan 140mg/m2). Post-transplant neutrophil engraftment occurredon the+14th day and platelet engraftment on the +32nd day. Piperacillin Tazobactam was started due to fever and sore throat on the 3rd day of ASCT. Teicoplanin was added to the treatment after the fever persisted on the 5th day of ASCT. Piperacillin Tazobactam treatment was discontinued due to acute phase reactant increaseand fever on ASCT +7th day and Meropenem was started. Teicoplanin treatment was stopped on the +16th day after transplantation, and Meropenem was stopped on the +17th day. On the +14th day of autologous SCT, complaints of itching and rash started on the patient's body The biopsy result of the patient who underwent skin biopsy was compatible with grade 1-2 GVHD The patient was started on high-dose corticosteroid therapy. On the+21st day, the complaint of itching and on the +28th day, the skin findings disappeared. On the +28th day of ASCT, corticosteroid therapy was tapered and discontinued. The patient is still being followed without disease. **Conclusion:** Autologous GVHD is an autoimmune syndrome initiated by autoreactive T cells that recognize major histocompatibility complex (MHC) class II antigens.CD8+ T cells recognize MHC class II determinants .There are three types of autologous GVHD: 1. spontaneous autologous GVHD 2.induced autologous GVHD; using cyclosporine, tacrolimus, interferon-α, interferon-y and alemtuzumab to induce the effect of GVT; GVHD induced by transfusion of non-irradiated blood products in patients with Hodgkin lymphoma, Non-Hodgkin Lymphoma (NHL), chronic lymphocytic leukemia, and acute myeloid leukemia 3. induced by transfusion of non-irradiated blood products.In the study of Drobyski et al. in 2008, it was reported that autologous GVHD developed in 5 of 386 patients who underwent autologous SCT. Response to steroids was not good. It was the first transplant of 223muliple myeloma patients. Only 2 patients developed autologous GVHD. Autologous GVHD developed in 3 of 27 patients with a second transplant.Autologous GVHD did not develop in Hodgkin lymphoma, non-Hodgkin lymphoma and AML patients. Therefore, it will be important to consider this complication while planning the second autologous stem cell transplant in these patients .Our case presents skin GVHD developing after autologous SCT. However, since our patient has lymphoma and/or did not take a proteasome inhibitor before, it is important by distinguishing it from other cases.When the literature is examined, it is thought that the preparation regimens and post-transplant CsA application prepare the ground for autologous GVHD In addition, it is known that patients with hematological malignancies who are female, given high-dose CD34+ stem cells,bortezomib, lenalidomide, pomalidomide and alemtuzumab used in their pre-transplant treatments are at risk for autologous GVHD.

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OP 14

ACUTE GRAFT-VERSUS-HOST DISEASE (AGVHD) PRESENTING AS STEVENS-JOHNSON SYNDROME (SJS)

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Case report: This case report describes a 34-year-old male with AML, intermediate risk, initially treated with standard 7 +3 induction chemotherapy followed by high-dose cytarabine consolidation. Despite achieving medullary remission, minimal residual disease(MRD) persisted. The patient underwent allogeneic-HSCT from an HLA-matched sibling donor. At the 33rd-month post-transplant, the patient, in full donor chimerism, developed a pituitary macroadenoma and hypopituitarism, alongside CNS relapse and medullary remission was confirmed in the bone marrow. Management included cranial radiotherapy and pituitary hormone replacement. Subsequent bone marrow relapse was treated with salvage chemotherapy (high-dose cytarabine and mitoxantrone), achieving medullary remission. Persistent CNS disease necessitated intrathecal triple therapy until cerebrospinal fluid clearance. MRI response was also obtained. A second allogeneic HSCT was performed from the same donor using a myeloablative FLU-TBI conditioning regimen. GVHD prophylaxis consisted of Cyclosporine-A and Methotrexate. On post-transplant day +25, the patient presented with severe cutaneous manifestations with some bullous lesions initially suspected as aGVHD or drug eruptions. The patient was initiated on a high-dose corticosteroid (2 mg/kg prednisolone) as a primary treatment. However, due to an inadequate response, ruxolitinib(10 mg twice-daily) was added to the treatment regimen after the first week. Dermatological evaluation raised suspicion of SJS, leading to IVIG administration. The skin biopsy report indicated the possibility of grade 2 GVHD, although the possibility of a drug reaction could not be excluded. Significant clinical improvement was observed within one week of ruxolitinib initiation. Corticosteroids were tapered over six weeks to physiological replacement doses. Ruxolitinib was continued for 56 days before gradual discontinuation. Cyclosporine was maintained with target trough levels of 100-250 ng/mL and

discontinued on day +90 post-transplant. This case highlights the diagnostic challenges in differentiating aGVHD in the post-HSCT setting from SJS/TEN-like presentations. It emphasises the importance of rapid intervention and the potential efficacy of JAK inhibitors in steroid-resistant cutaneous GVHD.

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Adult Hematology Abstract Categories

Other Diseases
OP 15

RAB27A MUTATION AND EBV INFECTION ASSOCIATED HEMOPHAGOCYTIC SYNDROME: A CASE REPORT

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Objective: Hemophagocytic lymphohistiocytosis (HLH) is a nonmalignant immune regulation disorder within the histiocytosis group of diseases. It is a clinical condition in which there is fever, hepatosplenomegaly and cytopenia due to dysfunction of cytotoxic T-lymphocytes and natural killer (NK) cells, activation of macrophages and T-lymphocytes, excessive production of proinflammatory cytokines and hemophagocytosis. It can be primary (familial) and secondary. HLH may also be seen in the course of some immune deficiencies. We aimed to present a case of HLH that developed due to EBV infection and Griscelli syndrome with RAB27A mutation. **Case Report:** An 11-month-old male patient who presented with complaints of fever and swelling in the neck was hospitalized with respiratory distress and poor general condition. On physical examination hepatosplenomegaly, cervical lymphadenopathy and silver-gray hair color was detected. It was learned that the patient had a sibling who died at 3 months old with a similar phenotype. In his tests; wbc:10600/mm3, neu:5000/mm3, lympho:5100/mm3, hb:6.3 gr/dl, plt:29,000/mm3, ALT:167 IU/l, AST:410 IU/L, total bilirubin:2.7 mg/dl, direct bilirubin:2.6 mg/dl, sodium:126 mmol/L, albumin:2.3 g/L, LDH:765 U/L, fibrinogen:69 mg/dl, ferritin: 59334 ng/ml were detected. Hemophagocytosis was observed in the bone marrow. The patient was started on the HLH 2004 chemotherapy protocol, but died within the first 24 hours of treatment. The patient's tests at the time of admission showed EBV VCA IgM: 7.77 (positive), EBV PCR: 72,000 copies. A homozygous c.149delG (p. Arg50Lysfs*35) mutation was detected in the RAB27A gene. **Conclusion:** Griscelli syndrome is a rare autosomal recessive disease that can be accompanied by silver-gray hair, hypopigmentation, recurrent fever and infections, immune deficiency and neurological disorders. Primary HLH is common in our country due to the high prevalence of consanguineous marriages. The patients who cannot be diagnosed early and develop HLH can be fatal, so early diagnosis of these patients is of vital importance.

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OP 16

A CASE OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS IN A CHILD: A RARE AND CHALLENGING DIAGNOSIS

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Case report: Hemophagocytic lymphohistiocytosis (HLH) is an aggressive and life-threatening increased inflammatory syndrome characterized by over-activation of the immune system. Although it is more common in the first years of life, it can be seen in children and adults of all ages. HLH is divided into primary (familial) and secondary (sporadic). Secondary HLH may be associated with malignancy, rheumatologic diseases, chemotherapy or immunosuppressive therapies, but the most common cause is infections. Many viral, bacterial, fungal and protozoa infections can be triggers for both secondary and familial HLH. A 7-year-old male patient was admitted to our clinic with complaints of fever, malaise and anorexia. Blood tests revealed WBC:2260/mm^3, Hb:7.1 g/dL, ANS:920/mm^3, Platelets:41.000/mm^3, Fibrinogen:127 mg/dL, Triglycerides:247 mg/dL, Ferritin:687 ng/mL and splenomegaly on physical examination. Bone marrow aspiration (BMA) examination revealed hemophagocytosis. HLH was diagnosed according to HLH-2004 criteria and HLH-2004 protocol including dexamethasone and cyclosporine treatment was started. Fever, cytopenia and splenomegaly developed again during outpatient follow-up of the patient who responded adequately to the treatment. Ferritin level increased above 3000 ng/mL and another BMA was performed. This time, amastigotes were seen in addition to hemophagocytosis in the BMA evaluation. Leishmania rapid diagnostic test (RK-39) and PCR were positive. Liposomal amphotericin B treatment failed to elicit an adequate response. Meglumine Antimoniate (Glucantime) treatment was then initiated. No mutation was detected in the HLH genetic examination sent at the time of

the initial diagnosis. At the end of 4 weeks of treatment, PCR was negative and clinical improvement was seen. Visceral leishmaniasis (kala-azar) is an infectious disease caused by *Leishmania donovani* and *Leishmania infantum* and causes secondary HLH. In cases where there is no response to HLH treatment, evaluation for leishmania should be performed if it has not been done before. If diagnosed early, patients may recover with antileishmanial treatment alone. In cases of visceral leishmaniasis presenting with the hemophagocytic syndrome, if no response to amphotericin B treatment is obtained, Meglumine Antimoniate treatment should be considered for complete clinical recovery improvement.

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OP 17

CONGENITAL DYSERYTHROPOIETIC ANEMIA TYPE I: PATIENT WITH ANEMIA AND SKELETAL ANOMALY

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Objective: Congenital dyserythropoietic anemias (CDAs) are inherited anemias that affect the erythroid lineage. CDAs are classified into the 3 major types (I, II, III) according to morphological, clinical and genetic features. [(1)] Before genetic diagnostic methods, bone marrow morphological abnormalities were the key diagnostic features of CDAs, such as erythroid hyperplasia with thin internuclear chromatin bridges between erythroblasts, binuclearity or multinuclearity of erythroblasts.[(2)] Next generation sequencing (NGS) has revolutionized the field of diagnosis. CDA type I (CDAI) is characterized by severe or moderate anemia and congenital anomalies such as skeletal abnormalities, chest deformity and short stature with identification of biallelic pathogenic variants in *CDAN1* or *CDIN1*. [(3)] The standard clinical management of CDA patients is measurement of hemoglobin and iron, transferrin saturation and serum ferritin concentration to monitor iron overload every three to six months. **Case report:** 28 year old female patient presented to our clinic with normocytic anemia (hb: 6,50 g/dL), splenomegaly, short stature, limb and vertebral deformities. Clinically, the patient was evaluated for anemia. All routine blood investigations were done (Table 1). Bone marrow biopsy showed hypercellularity for age with increased rate in the erythroid series with marked dysmorphism findings. (figure 1) Next-generation sequencing was performed for diagnosis in the patient with dyserythropoiesis and morphological anomaly. Homozygous variant of CDIN1 gene was detected. Detailed NGS and karyotype analysis of the patient are shown in table 2 and 3. The patient diagnosed with congenital dyserythropoietic anemia type 1 and followed up with deferasirox and erythrocyte replacement. **Conclusion:** CDAs are characterized by clinical and genetic heterogeneities. NGS based testing allows diagnosis. The increased knowledge of the genetic features and the detailed phenotyping of these patients will allow for the earliest start of the necessary treatment for the affected patients, as well as the monitoring of hemoglobin and iron levels. References:(1) Iolascon A, Andolfo I, Russo R. Congenital dyserythropoietic anemias. Blood. 2020 Sep 10;136(11):1274-1283. doi: 10.1182/blood.2019000948. PMID: 32702750. (2) Roy NBA, Babbs C. The pathogenesis, diagnosis and management of CDA type I. Br J Haematol. 2019. doi: 10.1111/bjh.15817. (3) Heimpel H, Kellermann K, Neuschwander N, Högel J, Schwarz K. The morphological diagnosis of congenital dyserythropoietic anemia: results of a quantitative analysis of peripheral blood and bone marrow cells. Haematologica. 2010;95(6):1034-1036

Table 1 – Laboratory investigations

Laboratory Tests	Results	Normal Value
Hemoglobin	6,50 g/dl	12,1 - 16,6
Total Leukocyte Count	4,09 × $10^3/\mu l$	3,46 - 10,04
Platelets	232 × $10^3/\mu l$	172 - 380
Mean Corpuscular Volume	96,20 fl	81,8 - 98
Reticulocytes	0,0747 × $10^6/\mu l$	0,0188 - 0,1086 × $10^6/\mu l$
Total Bilirubin	1,15 mg/dl	< 1,2
LDH	126	135-214
İndrect Coombs	Negative	-
Haptoglobulin	<0,1 g/l	0,3 - 2

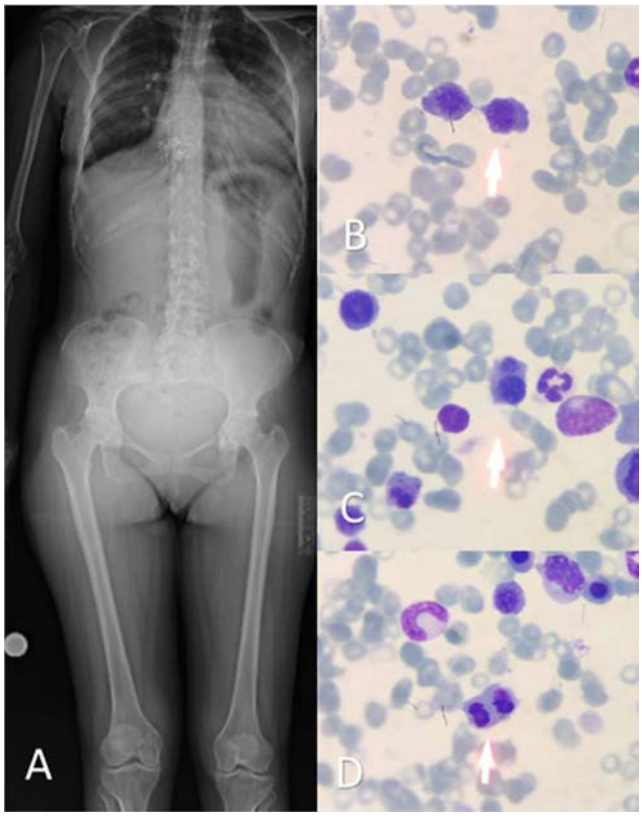

Figure 1: A) The patient's height was measured as 140 cm and scoliosis was detected in the skeletal survey. Bone marrow aspiration findings: **B)** Nuclear chromatin bridges between

erythroblasts. **C)** Binucleate erythroblasts **D)** Multinuclear eryhtroblasts.

Table 2 – Results of NGS analysis: Homozygous variant of CDIN1 gene was detected. (AR: Autosomal recessive, CDIN1: congenital dyserythropoietic anemia type 1, PRF1: perforin 1, TAF6: TATA-Box Binding Protein Associated Factor 6)

Gene transcript	Position	Inheritence	Genotype
CDIN1	Chromosome 15	AR	Homozygous
PRF1	Chromosome 10	AR	Heterosygotic
TAF6	Chromosome 7	AR	Heterosygotic

Table 3 – Cytogenetic analysis of the patient: With the cytogenetic analysis of the patient, tetraploid chromosome formation was detected in 17 of 18 of the metaphases as 92XXXX. (DEB: clastogenic effect of diepoxybutane, G6PD: Glucose-6-Phosphate Dehydrogenase)

Chromosomal analysis	92,XXXX	TP53 deletion	%85
Del20q12	%85	Del7q31.2	%83
Del5q31.2	%85	Tetrasomy7/tetrasomy8	%85
DEB	%0	G6PD	20,3 ıu/g Hb (normal)
Pyruvate kinase	397,9 (normal)	Osmotic Fragility of Erythrocytes	Normal

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OP 18

DETERMINATION OF FREQUENCY AND RISK FACTORS OF SECONDARY MALIGNANCY DEVELOPMENT IN HEMATOLOGICAL MALIGNANCIES

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Objective: Cancer remains a significant challenge within the healthcare system. According to the 2022 GLOBOCAN report, approximately 20 million people were diagnosed with cancer, and 10 million people passed away due to the disease. A significant improvement in the prevention, diagnosis, and treatment of cancer has resulted in a greater chance of overall survival for patients. Although survival rates for these patients have improved, they may be at risk for secondary malignancies. Secondary malignancy (SM) is defined as a tumor that differ from the primary tumor in terms of location, histopathology and genetics. Secondary malignancies could be classified into two categories based on the time of occurrence: synchronous tumors occur within six months of an initial primary cancer, while metachronous tumors occur after six months. Despite various genetic and environmental factors being implicated, the pathogenesis remains unclear. There are no standard protocols for screening, prevention, diagnosis, or treatment. Additionally, most studies on this topic conducted on data from the SEER (Surveillance, Epidemiology, and End Results) database. Although this database has the advantage of including many patients, it is insufficient to examine potential risk factors because it doesn't include individual medical information such as personal and family medical history, or alcohol and smoking use. In this study, we aimed to reveal the incidence of secondary malignancy in hematological cancer patients, analyze the potential risk factors and determine which factors are associated with the development of secondary malignancies. **Methodology:** This retrospective study was conducted on 2,003 patients diagnosed with Hodgkin Lymphoma (HL), Non-Hodgkin Lymphoma (NHL), Chronic Lymphocytic Leukemia (CLL), Essential Thrombocytosis (ET), Chronic Myeloid Leukemia (CML), Primary Myelofibrosis (PMF), Polycythemia Vera (PV), Myelodysplastic Syndrome (MDS) and Multiple Myeloma (MM) who applied to the Hematology Clinic of Bezmialem Vakif University Hospital between February 2012 and May 2024. Patients aged above 18 years and had adequate medical records were included in the study. Patients with a prior history of cancer or an inadequate medical history were excluded. The study group consisted of patients with secondary malignancies. Control subjects were matched to the study group based on age, gender, and diagnosis. Clinical parameters compared between the study and control groups included age, gender, presence of B symptoms, stage (early or advanced), primary involvement (nodal or extranodal), extranodal involvement, relapse, hematopoietic stem cell transplantation (HSCT), treatments received (radiotherapy and chemotherapy), modifiable risk factors (diabetes, hypertension, smoking, alcohol use), and a family history of cancer. For statistical analysis, occurrences of SM by the site of diagnosis were described by counts and frequencies. Differences between groups were evaluated by the pearson chi- square or fisher exact test. Logistic regression models were used to determine predictors of occurrence of SM in patients with hematological malignancies. Survival probabilities and relapse were estimated using the Kaplan-Meier method. Cox regression analysis was performed to evaluate the factors affecting survival times and relapse. The hazard ratio (HR) with corresponding 95% confidence interval was determined based on the Cox proportional hazards model. Statistical significance level was set as 0.05 and SPSS (version 28) package program was used in calculations. All p values < 0.05 were considered statistically significant. This study was approved

by Bezmialem Vakif University Ethical Committee (2024/50). **Results:** 1,757 of 2,003 hematological malignancies were analyzed, 51 of whom developed SM. There was no SM in patients with PV, and one patient with MDS was excluded for inadequate records. A total of 248 cases were selected as controls. The 299 patients with hematological malignancies had a median follow-up of 70 months (95% CI 46.7-93.2) and a median age of 64 years (range 24-89), and 154 (51.50%) were female. Among these 51 cases of SM, the mean time to secondary malignancy development was 103.61 months (95% CI 88.7-118.4), and 11 had synchronous (21.6%) and 40 had metachronous (78.4%) tumors (Figure-1A). A majority of SM were found in Non-Hodgkin Lymphoma (NHL) (n=26, 51%). The most common type of SM was lung cancer (n=9, 17.6%) (Figure-1B). In terms of age, gender, B symptoms, stage, primary and extranodal involvement, HSCT, chemotherapy, or modifiable risk factors, there was no statistically significant difference between patients with and without SPM. However, relapse and radiotherapy were significantly more common in the control (p=0.023 and p=0.038, respectively). Moreover, a family history of cancer was statistically significant in the study group (p= <0.001) (Table-1). In the multivariate logistic regression analyses, family history of cancer, no relapse, and no radiotherapy were associated with an increased risk of secondary cancer (Table-2). There were no significant differences in survival times between the groups (Figure-2A). Cox multivariate analysis showed advanced age and male gender to be risk factors for OS (Table-3). The mean time to relapse for hematologic malignancies was 106.6 months (range 98.8–114.4 months). SM patients had a longer time to relapse than controls (p=0.004) (Figure-2B). Cox multivariate analysis showed that patients who got autologous transplantation and those who did not develop secondary malignancy were at higher risk of relapse (Table-3). **Conclusion:** In conclusion, this study indicates that a family history, no relapse history, and no radiotherapy are associated with an increased risk of secondary malignancy development. Survival times between patients with and without secondary malignancy didn't differ significantly. It's also important to note that both synchronous and metachronous cases were included in our study. Interestingly, the study group had better clinical outcomes than the control group. The findings may be a result of a conscious and meticulous approach taken by patients with multiple malignancies and their clinicians. Therefore, early screening, follow-up, and a multidisciplinary approach should be considered in managing these patients from the moment of initial diagnosis. Further studies are needed to validate our findings and provide a more comprehensive understanding of the risk factors and outcomes associated with secondary malignancies.

	Synchronous n (%)	**Metachronous n (%)**	**Total n (%)**
HL	0 (0.0%)	7 (17.5%)	7 (13.7%)
NHL	7 (63.6%)	19 (47.5%)	26 (51.0%)
CLL	2 (18.2%)	3 (7.5%)	5 (9.8%)
ET	0 (0.0%)	5 (12.5%)	5 (9.8%)
CML	0 (0.0%)	1 (2.5%)	1 (2.0%)
PMF	0 (0.0%)	1 (2.5%)	1 (2.0%)
MM	2 (18.2%)	4 (10.0%)	6 (11.8%)
TOTAL	**11 (100.0%)**	**40 (100.0%)**	**51 (100.0%)**

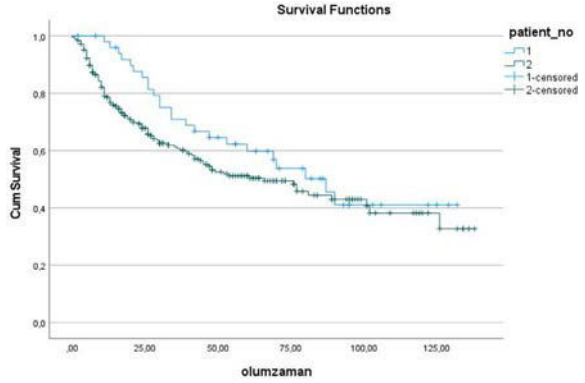
Figure-1A. The distrubution of secondary malignancies based on hematological malignancies.

	Synchronous n (%)	**Metachronous n (%)**	**TOTAL n (%)**
Lung	0 (0.0%)	9 (22.5%)	9 (17.6%)
Thyroid	3 (27.3%)	3 (7.5%)	6 (11.8%)
Breast	1 (9.1%)	3 (7.5%)	4 (7.8%)
RCC	1 (9.1%)	3 (7.5%)	4 (7.8%)
BCC	0 (0.0%)	3 (7.5%)	3 (5.9%)
Bladder	1 (9.1%)	2 (5.0%)	3 (5.9%)
Colon	0 (0.0%)	3 (7.5%)	3 (5.9%)
DLBCL	0 (0.0%)	2 (5.0%)	2 (3.9%)
Endometrium	1 (9.1%)	1 (2.5%)	2 (3.9%)
Pancreas	1 (9.1%)	1 (2.5%)	2 (3.9%)
Mesothelioma	1 (9.1%)	0 (0.0%)	1 (2.0%)
Larynx	0 (0.0%)	1 (2.5%)	1 (2.0%)
Rectal	0 (0.0%)	1 (2.5%)	1 (2.0%)
CMML	1 (9.1%)	0 (0.0%)	1 (2.0%)
Prostate	0 (0.0%)	1 (2.5%)	1 (2.0%)
GIST	0 (0.0%)	1 (2.5%)	1 (2.0%)
SCC	0 (0.0%)	1 (2.5%)	1 (2.0%)
Stomach	0 (0.0%)	1 (2.5%)	1 (2.0%)
Ovary	0 (0.0%)	1 (2.5%)	1 (2.0%)
Testicular	0 (0.0%)	1 (2.5%)	1 (2.0%)
Gallbladder	1 (9.1%)	0 (0.0%)	1 (2.0%)
Bowen	0 (0.0%)	1 (2.5%)	1 (2.0%)
Cervix	0 (0.0%)	1 (2.5%)	1 (2.0%)
TOTAL	**11 (100.0%)**	**40 (100.0%)**	**51 (100.0%)**

Figure-1B. Distribution based on the types of secondary malignancies.

Table 1 – Clinical features of patients

	With SM (N=51) Count (%)	Without SM (N=248) Count (%)	p
Age median (range)	66 (24-89)	63 (24-89)	0.423
Gender			0.934
Female	26 (51.0%)	128 (51.6%)	
Male	25 (49.0%)	120 (48.4%)	
Status			0.887
Alive	27 (52.9%)	134 (54.0%)	
Death	24 (47.1%)	114 (46.0%)	
B Symptoms			0.566
Absent	30 (58.8%)	135 (54.4%)	
Present	21 (41.2%)	113 (45.6%)	
Stage			0.083
Early	26 (51.0%)	94 (37.9%)	
Advanced	25 (49.0%)	154 (62.1%)	
Primary Involvement			0.326
Nodal	18 (35.3%)	106 (42.7%)	
Extranodal	33 (64.7%)	142 (57.3%)	
Extranodal Involvement			0.911
No	14 (27.5%)	70 (28.2%)	
Yes	37 (72.5%)	178 (71.8%)	
Relapse			**0.023**
No	48 (94.1%)	201 (81.0%)	
Yes	3 (5.9%)	47 (19.0%)	
HSCT			0.140
No	43 (84.3%)	226 (91.1%)	
Autologous	8 (15.7%)	22 (8.9%)	
Radiotherapy			**0.038**
No	36 (70.6%)	136 (54.8%)	
Yes	15 (29.4%)	112 (45.2%)	
Chemotherapy			0.335
No	6 (11.8%)	19 (7.7%)	
Yes	45 (88.2%)	229 (92.3%)	
Modifiable Risk Factors *(Diabetes, Hypertension, Smoking, Alcohol)*			0.206
No	8 (15.7%)	59 (23.8%)	
Yes	43 (84.3%)	189 (76.2%)	
Family History of Cancer			**<0.001**
No	36 (70.6%)	242 (97.6%)	
Yes	15 (29.4%)	6 (2.4%)	



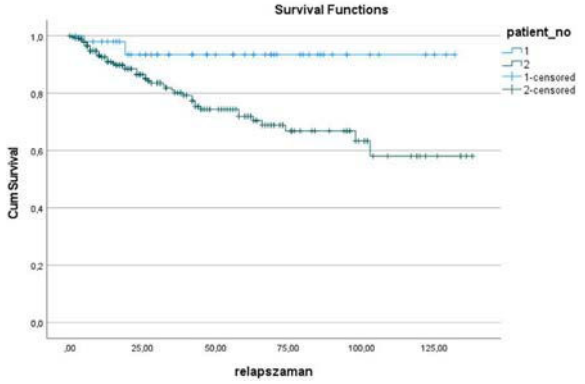


Table 2 – Multivariate analysis result to determine risk factors for SM development

	Multivariate OR (95% CI)	p
Stage		0.262
Early	1.47 (0.74-2.91)	
Advanced	1.00	
Relapse		**0.022**
No	5.18 (1.27-21.16)	
Yes	1.00	
Radiotherapy		**0.020**
No	2.44 (1.15-5.20)	
Yes	1.00	
Modifiable Risk Factors *(Diabetes, Hypertension, Smoking, Alcohol)*		0.179
No	1.00	
Yes	1.86 (0.75-4.64)	
Family History		**<0.001**
No	1.00	
Yes	21.90 (7.30-65.64)	

Table 3 – Risk factors for overall survival and relapse in patients.

	Multivariate HR (95% CI)	p
OVERALL SURVIVAL (OS)		
Age		**0.009**
Young	1.00	
Old	1.07 (1.01-1.13)	
Gender		**0.009**
Female	1.00	
Male	3.60 (1.37-9.44)	
Type of SM		0.157
Synchronous	1.00	
Metachronous	2.23 (0.73-6.78)	
Stage		0.779
Early	1.13 (0.43-2.93)	
Advanced	1.00	
Primary Involvement		0.089
Nodal	3.32 (0.83-13.26)	
Extranodal	1.00	
Extranodal Involvement		0.214
No	1.00	
Yes	2.13 (0.64-7.06)	
Relapse		0.879
No	1.34 (0.03-58.09)	
Yes	1.00	
HSCT		0.233
None	1.00	
Autologous	5.771 (0.32-102.5)	
Radiotherapy		0.622
No	1.00	
Yes	1.32 (0.42-4.07)	
RELAPSE		
Patients		**0.006**
with SM	1.00	
without SM	5.16 (1.59-16.17)	
Stage		0.429
Early	1.00	
Advanced	1.29 (0.68-2.45)	
Extranodal Involvement		0.969
No	1.00	
Yes	1.01 (0.48-2.12)	

Table 3 (continued)

	Multivariate HR (95% CI)	p
HSCT		<0.001
None	1.00	
Autologous	6.25 (3.40-11.51)	
Chemotherapy		0.203
No	1.00	
Yes	3.63 (0.49-26.44)	

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OP 19

FLT3-ITD POSITIVE ACUTE MYELOİD LEUKEMIA MIMICKING ACUTE PROMYELOCYTIC LEUKEMİA

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Objective: Acute myeloid leukemia (AML) is a heterogeneous disease due to genetic abnormalities and differences in immunophenotypes. The diagnosis of AML requires a careful evaluation of clinical morphology, immunophenotyping, cytogenetics, and molecular analyses. [1] In current practice, flow cytometry-based immunophenotyping provides a rapid and reliable method for diagnosing AML, including acute promyelocytic leukemia (APL). APL is a subtype of AML with distinct morphological, biological, and clinical characteristics. It can be effectively treated with ATRA-based therapy protocols. However, if not treated quickly, it can be fatal due to the risk of disseminated intravascular coagulation (DIC). Therefore, the diagnosis and treatment of APL represent a true medical emergency.[2] The absence of CD34, HLA-DR, and CD11b is a characteristic immunophenotypic feature that often distinguishes APL from other AML subtypes. However, AML subtypes other than APL that lack CD34 and HLA-DR expression have also been reported. APL accounts for 8% to 17% of AML patients. In AML patients without the PML-RARA fusion gene, 12% to 21% of cases have been identified as HLA-DR negative. These HLA-DR negative AML cases are distinct from APL because they do not carry the characteristic PML-RARA fusion.[3] HLA-DR and CD34 negativity is generally observed in AML-M1 and AML-M2 subtypes and is associated with nucleophosmin (NPM1) gene mutations and FMS-like tyrosine kinase-internal tandem duplication (FLT3-ITD) mutations.[4] NPM1 mutations are among the most common genetic abnormalities in AML, occurring in 27-35% of adult AML cases. Although rare, an "APL-like" immunophenotype has been reported in some de novo acute myeloid leukemia (AML) cases with NPM1 gene mutations. These cases show some immunophenotypic similarities to APL, despite being genetically different. AML cases with NPM1 mutations have unique clinical and biological characteristics.[5] In this study, we aimed to highlight the association of FLT3-ITD positivity, as opposed to NPM1, in HLA-DR negative non-APL AML cases in our clinic. **Methodology:** We examined three acute leukemia patients who were referred to our clinic within one month and were initially reported as APL based on flow cytometry analysis. Our focus on these patients stemmed from the fact that a condition with an incidence of 1-2 cases per 1 million people per year was diagnosed consecutively as APL in flow cytometry analysis within a short period. Fluorescent in situ hybridization (FISH) analysis for the 15;17 translocation and polymerase chain reaction (PCR) for FLT3-ITD and FLT3-TKD mutations were performed on the patients' peripheral blood. NPM1 mutations could not be analyzed in these patients. **Results:** Morphological examination of the patients' peripheral blood smears showed prominent nucleoli, Auer rods, and cup-like nuclei. Due to the CD34 and HLA-DR negativity in the flow cytometry analysis, these cases were initially considered APL. However, cytogenetic results revealed a negative t(15;17) translocation in all three patients, excluding APL. Additionally, all three patients tested positive for FLT3-ITD mutations. The peripheral blood white blood cell (WBC) count, blast percentage, and D-dimer levels were significantly elevated at the time of presentation in all patients. (Table 1) **Conclusion:** In cases with APL-like immunophenotypes, these similarities pose diagnostic challenges in daily practice. In this study, the APL-like AML cases exhibited CD34 and HLA-DR negativity and carried FLT3-ITD mutations. These de novo cases were characterized by high WBC counts, blast percentages, and elevated D-dimer levels. NPM1 is one of the most frequently mutated genes in AML, often seen alongside FLT3-ITD. Morphological and immunophenotypic similarities between many AML cases with NPM1 mutations and APL are well-known. In the first case, the blasts resembled the abnormal promyelocytes of APL (Figure 1.A). In the second case, a blast with a cup-like nucleus was observed (Figure 1.B). The "cup-like" nucleus morphology is specifically associated with acute myeloid leukemia (AML) with NPM1 gene mutations. The WBC count was very high in all cases a feature that is unusual for APL, especially the hypergranular variant. High WBC counts and blast cell percentages are typically described in NPM1-mutated AML.[6] Similarly, this could also be considered for FLT3-ITD, based on our findings. However, further studies with more cases are needed to confirm this. All patients demonstrated elevated D-dimer levels, which is more strongly associated with APL.[7] Unlike high D-dimer levels, fibrinogen levels were within acceptable limits. One patient had prominent gum hypertrophy, and frequent gum bleeding was observed during clinical follow-up. In conclusion, for cases with APL-like features but negative PML-RARA results by FISH and/or molecular methods, it is important to consider AML with NPM1 and/or FLT3-ITD mutations.

Table 1 – Clinical-Pathological Parameters of the Patients

	Patient 1	Patient 2	Patient 3
Age	34	35	57
Gender	Female	Female	Female
Hemoglobin(gr/dl)	6,3	9,4	8,8
Plateletes	12,000	75,000	91,000
Leukocytes(WBC)	159,000	120,000	307,000
LDH	841	405	471
Fibrinogen	246	419	341
D-dimer	7499	7853	1020

Table 1 (*continued*)

	Patient 1	Patient 2	Patient 3
Gum hypertrophy	-	+	-
Peripheral Blast %	%77,2	%89,8	90,9
CD 34	%9,8	negative	%1,4
CD 19	negative	negative	negative
CD13	%25	% 8	% 30,6
CD33	%99,8	%99,9	% 95
HLA-DR	negative	negative	negative
FLT-3 ITD	positive	positive	positive
t(15;17)PML/RARA	negative	negative	negative

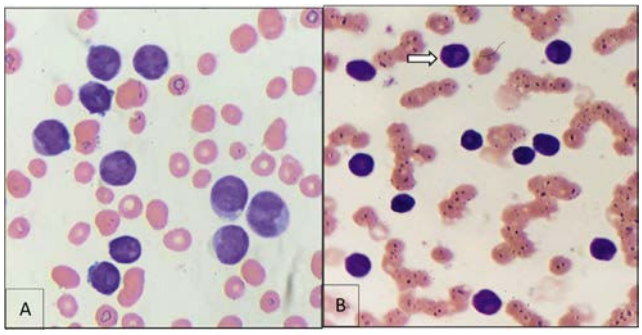

Figure 1: A) Blast Cells B) "Cup-like" Nucleus Morphology

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OP 20

A CASE OF ACUTE CORONARY SYNDROME DEVELOPING AFTER GRANULOCYTE COLONY STIMULATING FACTOR (G-CSF) ADMINISTRATION

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Objective: Common side effects after use of granulocyte colony-stimulating factor (G-CSF) include bone and muscle pain, headache, fever, and inflammation at the injection site. Less common side effects that cause serious morbidity and mortality in the early period include stroke, myocardial infarction (0.1%), and clinical conditions resulting from thrombosis, such as deep vein thrombosis . **Case Report:** A 60-year-old, Stage 3A, Multiple Myeloma (MM) patient with a very good partial response was planned stem cell mobilization with GCSF. The patient, who had no abnormalities in blood values and a normal cardiological examination approximately 1 month ago, was administered 10 micrograms/kg/day GCSF and approximately 6 hours after the first dose, the patient developed severe chest pain radiating to the left arm. The patient's ECG evaluation showed sinusoidal rhythm but tachycardia (115/beat/one minute). WBC: $29.7 \times 103/\mu$L, d dimer: 3510 μg/L and troponin: positivity. Angiography was performed on the patient because troponin values were increasing. A decrease in blood flow was detected in the LAD and right coronary artery branches. The patient's complaints improved with medical antiaggregant, anticoagulant and vasodilator treatment and he was discharged. **Discussion:** G-CSF acts as a regulator of myeloid progenitors and acts by promoting cell proliferation, differentiation, and maturation. The G-CSF receptor is found on hematopoietic stem cells, granulocytes, monocytes, and lymphocytes and also expressed on non-hematopoietic cardiovascular, neuronal, endothelial, and placental cells . there are rare reports that G-CSF and hematopoietic stem cells play a role in the development of atherosclerosis. Halter et al. reported in their study on 388 donors that 4 of the donors developed cardiac arrest within 30 days after stem cell mobilization, and 3 of these were due to myocardial infarction. This case is important in terms of emphasizing that we should follow the patient's clinical and biochemical evaluations very closely and be careful during the mobilization process.

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OP 21

A HEMATOLOGICAL CHAMELEON: THE TRANSITION FROM MDS TO NON-SECRETORY MULTIPLE MYELOMA AND BACK – UNRAVELİNG DIAGNOSTIC COMPLEXITIES AND ADAPTING THERAPEUTIC PATHWAYS

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Objective: The interplay between myelodysplastic syndrome (MDS) and non-secretory multiple myeloma (MM) can confound even seasoned hematologists, particularly when these conditions shift over time. This case presents a remarkable instance of a patient transitioning from MDS to non-secretory MM and then reverting back to MDS, underscoring the need for meticulous monitoring and adaptable treatment strategies when dealing with complex hematological landscapes. **Case Presentation:** An 82-year-old patient initially sought care for severe anemia, leading to a diagnosis of MDS based on bone marrow findings. At this point, no signs of MM were present. However, later investigations—specifically urine immunofixation—suggested the emergence of non-secretory MM, which was confirmed through a second bone marrow biopsy. The patient began treatment with Velcade, Revlimid, and Dexamethasone (VRD), showing marked improvement in anemia. Yet, given the patient's age and frailty, hematopoietic stem cell transplantation (HSCT) was not considered viable. As treatment progressed, the regimen evolved to ixazomib, lenalidomide, and dexamethasone, achieving remission for several years. Despite this stability, a resurgence of anemia signaled a reversion to MDS. A fresh treatment strategy was introduced, combining azacitidine, low-dose lenalidomide, and erythropoietin, aimed at maintaining functionality and quality of life without aggressive interventions. **Discussion:**

This case encapsulates the volatile nature of hematologic disorders, illustrating how diseases like MDS and non-secretory MM can morph and evolve. It emphasizes the importance of adaptive management, especially in elderly patients, where rigid treatment paradigms may fall short. The use of lenalidomide throughout the patient's journey reflects its dual utility in both plasma cell and myeloid disorders, while also sparking questions about whether prolonged exposure could influence secondary disease development. **Conclusion:** The patient's journey through MDS, MM, and back again underscores the critical need for dynamic reassessment, vigilance, and personalized care. This case exemplifies the blurred boundaries between plasma cell dyscrasias and myeloid neoplasms, raising thought-provoking questions about disease progression and therapeutic strategies. In navigating these complexities, clinicians are reminded of the importance of flexible, patient-centered approaches in managing intricate hematological disorders.

Keywords: Myelodysplastic Syndrome, Non-Secretory Multiple Myeloma, Disease Evolution, Adaptive Treatment, Elderly Patient Care.

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OP 22

BRAIN-INVOLVED MULTIPLE MYELOMA: STABILITY ACHIEVED WITH BENDAMUSTINE-POMALIDOMIDE, RADIOTHERAPY AND DARATUMUMAB-BASED THERAPY

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Objective: Multiple myeloma is a plasma cell malignancy that mainly affects the bones and skeletal system. The involvement of the brain as a site is very rare; it usually takes place via calvarial lesions with intracranial extension and is considered resistant to treatment. This report presents the case of a patient presenting with refractory MM and discusses in detail the efficiency of bendamustine-pomalidomide therapy and daratumumab-based maintenance after ASCT. **Case Report:** A 62-year-old female was diagnosed with kappa-positive MM in 2015, when plasma cell infiltration in the bone marrow was 20%. The patient underwent chemotherapy followed by ASCT in 2016. This patient attained remission after the transplant. Three years later, she presented with brain involvement, and MRI confirmed lesions of the parietal calvarium along with soft tissue expansion into the brain. The patient received radiotherapy to the affected area of the brain and initiated bendamustine-pomalidomide therapy; indeed, remarkable improvements were made in lesions of the brain and skeleton. Following that response, daratumumab, lenalidomide, and dexamethasone maintenance therapy was initiated to ensure ongoing disease control. Currently, the patient is clinically stable, with no evidence of further progression on follow-up imaging. **Discussion:** This case underlines the rarity of brain involvement in MM, as well as the role of ASCT as part of first-line treatment. The late appearance of extramedullary brain involvement three years post-transplantation truly epitomizes the whim of MM. Bendamustine-pomalidomide therapy was effective for refractory disease management, whereas daratumumab-based maintenance has helped maintain stability.

Keywords: Multiple Myeloma, Brain Involvement, Extramedullary Disease, Bendamustine, Autologous Transplantation.

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OP 23

SUCCESSFUL LONG-TERM REMISSION IN AGGRESSIVE YOUNG-ONSET CHRONIC LYMPHOCYTIC LEUKEMIA WITH IBRUTINIB AND VENETOCLAX: A DECADE-LONG CASE STUDY

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Chronic Lymphocytic Leukemia (CLL) typically affects older individuals and is frequently associated with genetic mutations that help predict its progression. However, this report presents a rare case of aggressive CLL in a young woman with no unfavorable genetic markers, who achieved lasting remission following the use of dual targeted therapy, after standard treatments repeatedly failed. A 40-year-old woman was diagnosed with CLL during a routine blood examination. Despite lacking any high-risk genetic indicators, her disease advanced swiftly over the next ten years. Initial treatment with CVP (cyclophosphamide, vincristine, prednisone) provided only a brief partial remission. A subsequent course of R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone) also led to relapse within a few months. Ibrutinib was introduced as a single-agent treatment but failed to control the disease. The patient's condition continued to deteriorate, with recurring lymph node enlargement and rising lymphocyte counts. Three years ago, venetoclax was added to her treatment alongside ibrutinib. This combination therapy produced an extraordinary result—complete remission was achieved, blood counts normalized, lymphadenopathy disappeared, and bone marrow tests showed no trace of residual disease.

Keywords: Chronic Lymphocytic Leukemia, Early-Onset CLL, Resistant CLL, Venetoclax, Ibrutinib.

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OP 24

SUCCESSFUL REDUCTION OF TRANSFUSION DEPENDENCE WITH LUSPATERCEPT IN A PATIENT WITH THALASSEMIA MAJOR: A CASE REPORT

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Objective: Thalassemia Major is a disorder of ineffective erythropoiesis with severe anemia, often requiring transfusions of RBCs throughout life. Transfusions are often required so frequently that the risk for iron overload and other complications strongly impairs the quality of life. Recently, this new erythroid maturation agent, luspatercept, has shown promise in reducing the transfusion requirements in patients with transfusion-dependent thalassemia. **Case Report:** A 40-year-old male patient with Thalassemia Major has been receiving regular erythrocyte suspensions since 2011, amounting to a total of 472 units by November 2023. The patient initially required an average of 2 units of RBCs per month to manage symptoms of fatigue and anemia. On February 17, 2023, the Luspatercept therapy was started at 75 mg every three weeks. Over the span of 22 treatments, one week after another, the need for RBC transfusions gradually diminished. The last transfusion was on November 21, 2023. The patient has since then maintained stable hemoglobin without further transfusion needs for approximately 10 months, a very impressive clinical improvement. **Discussion:** Therefore, this case offers a real-world view of the regard in which luspatercept proves effective in reducing transfusion requirements among patients suffering from Thalassemia Major. The sustained response for a period beyond 10 months really opens up possibilities for an overall better quality of life and reduction of the transfusion burden, which are important objectives in the management of transfusion-dependent patients. This report underlines early adoption of novel therapies such as luspatercept, which is considered instrumental in lessening complications resulting from chronic transfusions. This needs further studies and clinical discussions to optimize the dosing and duration of treatment in similar patients. This case adds to the growing body of evidence regarding the integration of erythroid maturation agents into standard management in patients with thalassemia.

Keywords: Thalassemia Major, Luspatercept, Transfusion Dependence, Erythrocyte Suspension, Ineffective Erythropoiesis.

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OP 25

PLEURAL EFFUSION DEVELOPING AS A CONSEQUENCE OF G-CSF ADMINISTRATION IN A PATIENT UNDERGOING AML TREATMENT

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Objective: Human granulocyte colony-stimulating factor (G-CSF) plays a vital role in boosting neutrophil production from hematopoietic progenitor cells, both in lab settings and within the human body. Beyond just raising neutrophil counts, G-CSF primes these cells, enhancing their ability to defend the body, making it a key player not only for neutropenic patients but also for those who are immunocompromised but not necessarily neutropenic. G-CSF is widely used in treating acute myeloid leukemia (AML), either alongside or following chemotherapy. One of its primary benefits is to speed up neutrophil recovery after chemotherapy, reducing both the length of hospital stays and the risk of infection. Here, we share a case involving a 17-year-old male with AML who developed pleural effusion after receiving G-CSF during his cytotoxic treatment. **Case Report:** The patient, a 17-year-old male, came to our clinic with an elevated white blood cell count and was subsequently diagnosed with acute myeloid leukemia (AML) after a bone marrow aspiration. He was immediately started on the 7+3 induction chemotherapy protocol. During the post-chemotherapy phase, when his neutrophil levels dropped, filgrastim (G-CSF) was introduced to help reduce the risk of infection and shorten the neutropenic period. For the first five days, everything seemed normal, and no side effects were noted. However, after that initial period, the patient began to experience worsening shortness of breath. Imaging revealed a growing pleural effusion on the left side. A diagnostic thoracentesis was performed, and the fluid was drained to provide relief. The analysis confirmed the fluid was transudative, with no signs of infection or malignancy. When the pleural effusion returned, G-CSF was promptly stopped, and the effusion rapidly resolved. After consolidation therapy, G-CSF was reintroduced, and once again, pleural effusion reappeared on the third day of treatment, but this too resolved spontaneously once the G-CSF was discontinued. A pleural biopsy showed no pathological findings, confirming that the G-CSF was likely responsible for the effusion. **Discussion:** In neutropenic patients, pleural effusion is typically linked to infections, but in this case, no signs of infection or AML involvement were found. The recurring pleural effusion, which resolved after stopping G-CSF, suggests a rare side effect of the treatment. Research indicates that G-CSF may trigger local inflammatory responses, including elevated cytokines like IL-6 and TNF-α, potentially leading to fluid accumulation in the pleura. This case highlights the importance of monitoring for unusual side effects during G-CSF therapy in AML patients.

Keywords: G-CSF, AML, pleural effusion, neutropenia, cytokine response.

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OP 26

MODERATE CLINICAL COURSE IN SEVERE ANAEMIA

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Introduction: Although iron deficiency anemia is more common in children and women, it can also occur in adult men, depending on their socioeconomic status and health conditions (1). Symptoms of anemia, such as dyspnea, tachypnea, tachycardia, pallor, heart failure, and cognitive dysfunction, can vary based on the severity of the anemia, its onset speed, the patient's age, and physiological condition. In young and generally healthy individuals, chronic anemia may go unnoticed until hemoglobin levels fall below a critical threshold or until physically demanding situations arise (2). We present a case of iron deficiency anemia with a hemoglobin level of 2.8 g/dL, yet the patient did not exhibit anemia symptoms that would disrupt hemodynamics. **Case Report:** A 43-year-old male patient with mental retardation secondary to meningitis during childhood presented to the emergency department in September 2024 with complaints of weakness, fatigue, and exertional dyspnea. On physical examination, blood pressure was 90/60 mmHg, heart rate was 94 bpm, respiratory rate was 18/min, skin and conjunctiva were pale; other findings were normal. Laboratory results showed WBC: $9.2 \times 10^3/\mu$L, hemoglobin: 2.8 g/dL, hematocrit: 9.1%, and platelet count: $365 \times 10^3/\mu$L. The patient was clinically admitted due to severe anemia. LDH and indirect bilirubin levels were normal. Peripheral smear revealed severe hypochromia and microcytic erythrocytes. No schistocytes or atypical cells were observed. For the etiology of anemia, serum Fe: 7 μg/dL TIBC: 294 μg/dL, ferritin: 3.6 ng/mL, folate: 6.68 ng/mL, and vitamin B12 was 375 pg/mL. Due to the hemoglobin level of 2.8 g/dL, the patient received 3 units of red blood cell suspension. After replacement, hemoglobin increased to 7.4 g/dL, and iron replacement was planned. Considering the patient's mental retardation and the difficulty in regular medication adherence, parenteral iron replacement was administered. The patient was discharged with a recommendation for follow-up in 2 weeks. **Results:** According to many anemia grading systems, a hemoglobin level dropping below 6.5 g/dL is considered life-threatening, and patients are theoretically expected to experience a range of symptoms (3). However, the literature reports cases where individuals sought medical assistance with hemoglobin levels below 3 g/dL and hematocrit levels below 10% (4,5). Despite our patient having a hemoglobin level of 2.8 g/dL at the time of admission, serious anemia symptoms such as tachycardia and tachypnea were not observed. As a result, as seen in our male patient, the activation of adaptive mechanisms in chronic anemia can allow for a mild clinical presentation. Even at critical hemoglobin levels, patients may present with moderate symptoms

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