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Tafaul-Al-Ahsa Cancer Foundation Wins EXCELLENCE AWARD for Cancer Awareness Initiatives at Gulf Cancer Awareness Week 2024





The Gulf Oncology Society meeting resulted in fruitful outcomes, with young doctors showing keen enthusiasm for assuming leadership roles and implementing impactful initiatives.

The Official Journal of the Gulf Federation For Cancer Control

Table of Contents

Original Articles

Comparison of Acute Toxicities, Overall Treatment Time and Quality of Life in Head and Neck Cancer Patients Treated with IMRT and Helical Tomotherapy **07**
Yashaswini B R, Kumara Swamy, Chundru Swaroopa, Vikram Maiya

Assessment of Radiation Induced Pneumonitis and Pericarditis in Patients Undergoing Breast Conservative Treatment Using Hypofractionated Simultaneous Integrated Boost Technique **15**
Senthamizhan Sundaramoorthy, Gunaseelan Karunanidhi, Pravati Pal, Sunitha.V.C, Hanumitha Radhakrishnan

Histopathological Study of Breast Cancer at the Oran University Hospital Center on a Population from Western Algeria **30**
F.Z.Boussouf, A.Medjdoub, Z.Tahari, F.Z.Tahari, H.Ouldcadi, S. Seddiki, T.Sahraoui.

Assessing Mismatch Repair Expression by Immunohistochemistry in Colorectal Adenocarcinoma –Insight from a Tertiary Care Centre **35**
Rachana Lakhe, Rajeev Doshi, Preeti Doshi, Amrutraj Patil, Ravindra Nimbargi

Cost of Healthcare Services in Geriatric Neuro–oncology: A descriptive Analysis **42**
Zainab Saif Al–Siyabi, Omar Al–Mahrouqi, Osama Al–Senani, Suha Al–Amri, Zainab Al–Ajmi, Anfal Al–Nazwani, Fatema Taheri, Hashim Al–Hashimi, Mallak Al–Sheriyani, Mustafa Talib Al–Ani, Shima Al–Shamli, Salim Al–Abri, Tariq Al–Saadi

Establishing and Monitoring an Effective Management of Benign Nontoxic Multinodular Goitre in Kuwait "Utilizing Two Different Dose Levels of Recombinant Human TSH in Combination with Radioactive Iodine" **49**
Iman Al–Shammeri, Michael Masoomi, Nael Al–Shammeri, Fawaz Al–Abdali, Amna Al–Shagooli

Laparoscopic Versus Open Surgery for Colorectal Cancers: Clinical and Pathological Outcomes from a Single Institution in Bahrain **64**
Khaled Nazzal, Layla Hasan, Asma Alqaseer, Hussain A. Abdulla, Aalaa S. Majed, Mohamed A. Abushwemeh, Esra S. Salman, Mohamed Arafa, Ahmed Jawad

Clinical Outcomes and Dosimetric Evaluationof Interstitial Brachytherapyin Gynecological Malignancies **69**
NV Vinin, Adarsh Dharmarajan, Joneetha Jones, EK Nabeel Yahiya, Geetha Muttath, Nayan Sneha

Review Article

Epidemiological, Diagnostic and Therapeutic Aspects of Hepatocellular Carcinoma in Morocco: A Case Series and Review of Literature **75**
Imane Zouaki, Adil Aiterrami, Zouhour Samlani, Sofia Oubaha, Khadija Krati.

Case Report

Polycythemia Vera Masked by Megaloblastic Anemia **91**
M. Loukhnati, K.Khalil, FE. Lahlimi, I.Tazi

Managing Inconsistent Bladder Volumes in the Prostate Cancer Patient Using Daily Online Adaptive RT: A Case Report **94**
Venkada Manickam Gurusamy, Yoganathan Sullimullur Arunachalam, Mohamed Riyaz Poolakundan, Sarah Fiona Mc Cabe, Rabih Wafiq Hammoud, Noora Al–Hammadi

Special Review

Evaluating Primary and Secondary Prevention Interventions for Oral Cancer: Insights from the IARC Handbooks on Cancer Prevention Volume 19 Volume 19, Oral Cancer Prevention **100**
Samar Alhomoud

Conference Highlights/Scientific Contributions

• **News Notes** **102**

• **Advertisements** **107**

• **Scientific Activities** **108**

Case Report

Polycythemia Vera Masked by Megaloblastic Anemia

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Abstract

Polycythemia vera (PV) is a chronic myeloproliferative disorder characterized by uncontrolled red blood cell production. Megaloblastic anemia is caused by deficiency of cobalamin (vitamin B12) and/or folate (vitamin B9). While B12 deficiency may be caused by insufficient dietary intake or impairment of its utilization, its association with PV is described without exact knowledge of the physiopathology. We herein report the occurrence of megaloblastic anemia due to Vitamin B12 deficiency in an 85–year–old North African woman patient with PV. This case highlights this atypical presentation of PV and challenges that comes with it causing the delay of diagnosis and the complexity of its diagnosis and treatment.

Keywords: megaloblastic anemia, polycythemia vera, association, case report

Introduction

Polycythemia Vera (PV) is a stem cell disorder characterized by uncontrolled red blood cell production. It occurs most often in individuals more than 60 years. Around 95% of patients with PV harbor an acquired Janus Kinase 2 mutation, namely JAK2 (V617F) [1]. While iron deficiency is a known feature of PV, B12 deficiency may be associated to it without exact knowledge of the physiopathology. We herein report the occurrence of megaloblastic anemia due to Vitamin B12 deficiency in an 85–year–old North African woman patient with PV.

Case Presentation

An 85–year–old North African woman presented with 3 years history of fatigue, heart palpitations, shortness of breath, and chronic abdominal pain. The patient denied having other digestive symptoms or neurological symptoms. On physical examination, the patient was stable with normal vital signs. The skin was very pale. Physical examination was otherwise normal without any neurologic defects.

Her initial laboratory investigations demonstrated aregenrative macrocytic anemia (hemoglobin at 6.9 g/dL, mean Corpuscular volume (MCV) at 107 fL, reticulocyte count at 57 G/L), and thrombocythemia with platelets at 582 G/L. Her white cell count (WCC) was normal. Peripheral blood smears revealed hypersegmented neutrophils with signs of dysgranulopoiesis: cobot rings, basophilic stippling, and some dacryocytes with anisocytosis. Bone marrow examination revealed a hypercellular marrow with erythroid hyperplasia and the presence of megaloblasts as a result of asynchrony of nuclear and cytoplasmic maturation.

The vitamin B12 level is decreased 100pg/mL and the folate level was normal. Esophagogastroduodenoscopy (EGD) identified erythematous gastritis and the presence of Helicobacter Pylori (HP) infection on gastric biopsies. Intrinsic factor antibodies (IFA) and parietal cell antibodies (PCA) were negative. The patient received first–line treatment of HP and intramuscular hydroxocobalamin was started (1 mg/day for 7 days followed by 1 mg/week for 4 weeks followed by 1 mg/month). Five weeks after treatment initiation, the patient was found to be in good condition with a florid face. Complete blood count found polycythemia (hemoglobin 16.9 g/dL, MCV 81 fL, hematocrit 53%), leukocytosis with neutrophilia (WCC and absolute neutrophil count at 28 G/L and 23 G/L respectively), and thrombocytosis (platelets at 772 G/L).

In 2010– ten years prior her admission in our department– our patient received routine lab work and the results were as follows: WCB was elevated at 11.7 G/L, platelets at 1397 G/L, hemoglobin 15 g/dL, hematocrit 47%.

Further investigations were performed in our department: erythropoietin (EPO) blood level was low at 2.1 UI/L and PCR analysis for the JAK2 V617F point

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mutation was positive.

Hydroxyurea was started at the dose of 20 mg/kg/day with aspirin 100 mg bid and hydroxocobalamin was stopped.

Four weeks later, CBC showed normocytic anemia. Hydroxyurea was stopped due to suspected toxicity. CBC control performed a week later showed the persistence of normocytic anemia. Hydroxocobalamin injections were readministrated and hemoglobin concentration was rising progressively. Hydroxyurea was restarted at a lower dose and was adjusted every week in order to find the minimal effective dose to keep hemoglobin at a normal range. For our patient, the dose was fixed at 500 mg/day.

Discussion

Polycythemia Vera (PV) is a myeloproliferative neoplasm (MPN) characterized by clonal erythrocytosis and increased hemoglobin (>16.5 mg/dL and >49% respectively in men) and increased hematocrit levels (>16 mg/dL and>48%respectively in women), bone marrow hypercellularity, and presence of Janus kinase 2 (JAK2) mutations and subnormal erythropoietin level[1]. PV is usually associated with iron and folic acid deficiency. Interestingly, elevation of serum vitamin B12 is observed in approximately 30% of patients because of elevation of transcobalamin–II and increased granulocytic proliferation[2–5].

In our case, the fortuitous finding of thrombocytosis ten years ago suggests that our patient had undiagnosed polycythemia vera confirmed by the identification of JAK 2 V617F mutation. It was masked at the moment of presentation due to megaloblastic anemia which explains the platelet count > 772 G/L after four weeks of Hydroxocobalamin treatment.

Many theories have been described to explain the B12 deficiency. One of them describes a congestion of the gastric mucosa responsible for atrophy with achloridria causing a decrease in the secretion of the intrinsic factor and then appearance of a deficiency in vitamin B12[6].

Another theory of the association of the two entities is autoimmunity, England J.M & al have compared the prevalence of APCA in 51 patients with PV and controlled group, and concluded that they have the same percentage of APCA and failed to demonstrate this theory[7].

Many cases in the second half of 19 century describe the occurrence of polycythemia after treatment with cobalamin, but at that time, the true definition of PV didn't exist yet and perhaps those patients had the same features as our case.

PV, age and hyperhomocysteinemia described in vitamin B12 deficiency are all considered risk factors for systemic atherosclerosis, cardiovascular disease and stroke[8,9]. Hydroxyurea twice daily associated with aspirin or Low–molecular–weight is administrated to patients with high risk factors like our patient[10]. Stopping or substituting vitamin B12 in our patient was decided according to the evolution of the CBC and no data was found in the literature.

Conclusion

Although uncommon, hematologists should be aware that PV may be masked due to megaloblastic anemia making the establishment of an early and accurate diagnosis very challenging in atypical presentations of PV in current practice.

Conflicts of interest

The authors declare that there are no conflicts of interest

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Consent

Consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

References

1. Arber DA, Orazi A, Hasserjian R, Thiele J, Borowitz MJ, Le Beau MM et al. The 2016 revision to the World Health Organization classification of myeloid neoplasms and acute leukemia. Blood. 2016 May 19;127(20):2391–405.
2. Ginzburg YZ, Feola M, Zimran E, Varkonyi J, Ganz T, Hoffman R. Dysregulated iron metabolism in polycythemia vera: etiology and consequences. Leukemia. 2018 Oct;32(10):2105–2116.
3. Faurschou M, Nielsen OJ, Jensen MK, Hasselbalch HC. High prevalence of hyperhomocysteinemia due to marginal deficiency of cobalamin or folate in chronic myeloproliferative disorders. Am J Hematol. 2000 Oct;65(2):136–40.

4. Gauchan D, Joshi N, Gill AS, Patel V, Debari VA, Guron G et al. Does an elevated serum vitamin B(12) level mask actual vitamin B(12) deficiency in myeloproliferative disorders? Clin Lymphoma Myeloma Leuk. 2012 Aug;12(4):269–73.

5. Serraj K, Mecili M, Housni I, Andrès E. Hypervitaminémie B12 : physiopathologie et intérêt en pratique clinique [Hypervitaminemia B12 (high level of cobalamin): physiopathology, role and interest in clinical practice]. Presse Med. 2011 Dec;40(12 Pt 1):1120–7.

6. Delamore IW. Vitamin B–12 metabolism in polycythemia vera. Clin Sci. 1961 Apr;20:177–84.

7. England JM, Elsevier F, McVerry BA, et al. Autoimmunity in polycythaemia vera and related disorders: a comparison of fifty–one patients and a control group. British Journal of Haematology. 1979;43(3):379–385.

8. Tefferi A, Vannucchi AM, Barbui T. Polycythemia vera treatment algorithm 2018. Blood Cancer J. 2018 Jan 10;8(1):3.

9. Chrysant SG, Chrysant GS. The current status of homocysteine as a risk factor for cardiovascular disease: a mini review. Expert Rev Cardiovasc Ther. 2018 Aug;16(8):559–565.

10. Tefferi A, Barbui T. Polycythemia vera: 2024 update on diagnosis, risk–stratification, and management. Am J Hematol. 2023