

Primary gastric lymphoma and spontaneous remission associated with co-infection of COVID-19 and undefined typical bacterial agent.

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Case Report

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Abstract

Background: A case report is viewed as a clinical experience of a patient with primary gastric lymphoma. The article demonstrates reduction of the lymphoproliferative disorder condition to the spontaneous remission state, after community-acquired pneumonia with co-infection of COVID-19, and undefined typical bacterial agent. A positive response has gone through a period of COVID-19 and appeared of ongoing the standard antibacterial and basic symptomatically treatment.

Case presentation: A 65-years-old woman was admitted by an ambulance to the emergency department with severe condition. In time of hospitalization, the patient has diagnosed first appearance of primary gastric lymphoma ulcer form with signs of ongoing capillary bleeding, normochromic anaemia, thrombocytopenia, diabetes mellites type 2 in hypoglycaemic state owing to metformin, and chronic bronchitis. Laboratory and instrumental data investigations confirms the severity of condition.

Conclusion: The article underlines extremely positive response up to disappearing ulcer form of primary gastric lymphoma and stabilization in laboratory and instrumental investigations data. It associates with anti-tumor effect of highly cytokines production in view of COVID-19 and undefined typical bacterial agent.

Background

Primary gastric lymphoma (PGL) is an uncommon condition, accounting for less than 15% of gastric malignancies and about 2% of all lymphomas¹. The stomach is a more common extra nodal site for lymphomas. It means for lymphomas originate elsewhere and metastasis to the stomach². It is also the most common source of lymphomas in the gastrointestinal tract³.

SARS-CoV 2 is a strain of coronavirus that causes COVID-19. It is the main respiratory illness responsible for the ongoing COVID-19 pandemic, which started registration since 2019⁴.

In the article, a clinical experience gives a description of the patient with PGL. The data information of esophagogastroduodenoscopy (EGD) and stomach biopsy established primary gastric lymphoproliferative disorder. Also, the case demonstrates reduction of the lymphoma activity after community-acquired pneumonia owing to co-infection of COVID-19, and undefined typical bacterial agent. At the time of ongoing standard antibacterial and basic symptomatically treatment, a positive response was established. Moreover, the remission has observed of the diseases condition during coronavirus disease (COVID-19). As well, the article demonstrates comparison in reduction of cytokines production and different diseases state because of various reasons among similar cases from various countries in Hodking's lymphoma, non-Hodking`s lymphoma, and H. pylori.

Case Presentation

A 65-years-old woman was admitted by an ambulance to the emergency department with complaints of dizziness, nausea, bruises over the body, malaise, appetite loss, fainting, severe general weakness in October 2020. According to the case history information, it was a first time of hospitalization. The patient's medical history, provides proof of no presence and past medical history of oncology and other several diseases, except diabetes mellitus type 2. She has received metformin (oral route) 1000 mg once a day. The data information of the patient presented in EGD with stomach biopsy and Chest X-ray (CXR) in October 2020, which shows a morphological picture of gastric lymphoproliferative disorder and chronic bronchitis. In time of discharging, laboratory investigations indicated cytopenic syndrome of 3 cells lines in complete blood count (CBC) with red blood cells (RBC) count of $2,42 \times 10^{12}/L$ (reference range $3,9-4,7 \times 10^{12}/L$), hemoglobin (Hb) of 76 g/L (reference range 115-160 g/L), mean corpuscular volume (MCV) of 97,9 fL (reference range 80-100 fL), white blood cells (WBC) count of $3,55 \times 10^9/L$ (reference range $4,0-9,0 \times 10^9/L$) including lymphocytes of 13,2% (reference range 20-40%) and absolute lymphocytes count (ALC) of $0,47 \times 10^9/L$ (reference range $0,8-5,0 \times 10^9/L$). Inflammation markers and acute phase proteins indicated increasing C-reactive protein (C-RP) of 16,5 mg/L (reference range 0-5,0 mg/L) and D-dimer of 21,19 (reference range 0-0,5 mg/L). Other laboratory and instrumental investigations data information was in the reference ranges (Figure 1). The patient has no doubt diagnosed with severe condition of PGL ulcer form with signs of ongoing capillary bleeding, normochromic anaemia, thrombocytopenia, diabetes mellitus type 2 in hypoglycaemic state owing to metformin, and chronic bronchitis. The patient has received antibacterial and basic symptomatically treatment: ciprofloxacin 200 mg / 100 mL two times a day intravenous injection for 13 days, omeprazole (oral route) 20 mg two times a day, 40% glucose solution 20 mL once a day intravenously for 2 days; 5% glucose solution 500 mL once a day intravenously for 3 days, and correction with metformin (oral route) dose from 1000 mg to 500 mg once a day for 5 days. At last, the patient was discharged with disease stabilization and slightly positive response for getting a consultation from an oncologist for initiate specific treatment in October 2020.

In time of outpatient care, the patient has not received the consultation from the oncologist. Next hospitalization condition ongoing in January 2021, after 2 months of previous time. The patient was delivered to the hospital with the same complaints, and addition of respiratory distress. The condition transformed to combine of PGL and community-acquired pneumonia with co-infection of COVID-19 and undefined bacterial agents. The data information of co-infection confirmed by CXR and lungs computer tomography (CT) scan. CXR showed right sided multisegmented pneumonia, which were on the right in the middle and lower zone of the lungs with infiltrative opacification contours. CT scan of the lungs showed right sided upper lobe pneumonia and pulmonary fibrosis on both sides. A pulmonary fibrosis noted along the periphery, fibrous cords, and infiltration of upper lobe on the right. (Figure 2, 3). Laboratory and other instrumental investigations were scheduled for differential diagnosis and excluding complication of PGL. Laboratory investigations demonstrate bacterial infection activity into the patient, CBC indicates WBC count of $14,89 \times 10^9/L$ including segmented neutrophils of 90,5% (reference range 40-60%), absolute neutrophils count (ANC) of $13,47 \times 10^9/L$ ($2,5-7,0 \times 10^9/L$), lymphocytes of 13,2%, ALC of $0,47 \times 10^9/L$ (Figure 1); inflammation markers indicate C-RP of 653.5 mg/L, D-dimer of 1,74 mg/L, erythrocyte sedimentation rates (ESR) of 75 mm/H (reference range 0-20 mm/H), fibrinogen of 7,74 g/L

(reference range 2,0-4,0 g/L). Other laboratory data were in reference ranges. Specific tests, which include polymerase chain reaction (PCR) of SARS-CoV 2 nasopharyngeal test, and SARS-CoV 2 enzyme-linked immunosorbent assay (ELISA) ratio of immunoglobulin M (IgM) and immunoglobulins G (IgG), TB microscopic, Xpert MTB/RIF, and culturology of sputum established negative result. EGD repeated and showed chronic superficial gastritis with no gastric lymphoproliferative ulcer and other severe pathology process. The patient management consisted of antibiotics and basic symptomatic treatment: cefotaxime 1 g four times a day intravenously injection for 7 days, azithromycin (oral route) 500 mg once a day for 5 days, omeprazole (oral route) 20 mg once a day for 10 days, 0,9% normal saline 500 mL with 5% vitamin C 6,0 mL intravenously for 3 days, enoxaparin 30 mg / 0,3 mL twice a day subcutaneously for 10 days. The patient has not received glucocorticoids (GCS), chemotherapy or immunotherapy and other oncology treatment. She has discharged with highly positive effect with no specific therapy of PGL and COVID-19. The patient's dynamic of laboratory investigations illustrates a situation with highly inflammation markers, acute phase proteins, and enormous immune response activity ongoing rapid decreasing against decreasing of pathogens (Figure 1). The pathophysiology process identified as a resemble of PGL remission and reliving from co-infection of COVID-19 and undefined typical bacterial agent.

Discussion

As noted in British Society for Haematology with SARS-CoV-2-induced remission of Hodgkin's lymphoma. The theory of the pathophysiology action mechanism includes cross-reactivity of pathogen-specific T-cells⁵. The mechanism points to way cross-reactivity against infected cells. The same situation described in non-Hodkin's lymphoma with anti-tumor immune response after concurrent infection⁶.

SARS-CoV-2 uses the viral spike (S) protein for host-cell attachment and entry through binding of ACE-2 (angiotensin-converting enzyme 2)⁷. It is important action mechanism of the pathology process into cells, which may be the clue of the case explanation in the patient situation. As known, the other bacterial infection, such as *H. pylori* may regulate gastric inflammation and associated cytokines by ACE-2⁸.

Conclusion

As has been shown, the case points to the outcome of standard treatment with no specific action, which resembles mechanism of provoking cytokine releasing in consequence of co-infection: COVID-19 and undefined typical bacterial agent. The affecting of co-infection could enable attracting tumor microenvironment (TME) immune cells. In terms of action mechanism position, which includes cross-reactivity of pathogen – specific T-cells with tumor antigens and natural killer (NK) cells activation by inflammatory cytokines producing in response to infection. The actions may account for the anti-tumor effect sufficient.

In summary, the patient underwent specifically extremely positive response up to disappearing of primary gastric lymphoma ulcer form. On the one hand, decompensation and inevitable negative effect of patient

condition were expected. On the other hand, the condition demonstrated reliving from COVID-19, undefined typical bacterial pathogen, and spontaneous remission of lymphoma without specific treatment of lymphoproliferative disorder.

Declarations

Ethics approval and consent to participate

The study since all data are completely anonymous. The patient consented to the use of anonymous data.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

1. Kurmanova Gaukhar Medeubaevna has explained whole patient condition and remission, from position of immunology, oncology and hematology.
2. Yerkebulan Nurlanovich Bossatbekov lead the patient in the hospitalization time and pointed the case situation, also design the work.
3. Zhanna Maxutovna Alimanova has explained whole patient condition and remission, as general practitioner, and has led the patient at first hospitalization time.
4. Sholpan Abilkassimovna Tankayeva has analyzed the situation by differential diagnosis criteria, as a pulmonologist from the respiratory diseases.
5. Bugibaeva Akbota Berdalievna has helped with review of the case condition, interpreted data analysis

6. Abhishek Sarawata, Kajal Singh, Fuza Adhur Manhuvalappa Abbas, Neetu Singh are students, who helped to analyze data base information of laboratory and instrumental investigation, they prepared figures

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Figures

Figure 1

RBC – Red blood cells, Hb – Hemoglobin, MCV – Mean corpuscular volume, WBC – White blood cells, PLT – Platelets, Htc – hematocrit, ANC - Absolute neutrophil count, ALC - Absolute lymphocyte count, CRP – C-reactive protein, ESR – Erythrocyte sedimentation rates, PCT – Procalcitonin.

Figure 2

Red arrows show right sided upper lobe pneumonia and pulmonary fibrosis on both sides of the lungs. A pulmonary fibrosis notes along the periphery, fibrous cords, and infiltration of upper lobe on the right.

Figure 3

Red arrows show right sided upper lobe pneumonia and pulmonary fibrosis on both sides of the lungs. A pulmonary fibrosis notes along the periphery, fibrous cords, and infiltration of upper lobe on the right.