

# Celiac disease presenting as unexplained infertility



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Title- Celiac disease presenting as unexplained infertility and pancytopenia-  
A Case Report

Abstract -

Celiac disease is an autoimmune disorder of the small intestine significant association with several extraintestinal features, such as reproductive disorders in women with undiagnosed celiac disease. Worldwide, CD prevalence is approximately 1%. Several studies suggest a higher prevalence of undiagnosed CD in patients with infertility. A 21 years old Indian woman who presented with history of primary amenorrhea, diminished secondary sexual character, asthenia, history of weight loss and chronic diarrhea. On admission her hemoglobin (Hgb) was 4.2 g/dL. Laboratory investigations confirmed a Immunoglobulin A (IgA) anti-tissue transglutaminase antibodies (IgA-tTG) was markedly elevated to more than 300 u/ml, colonoscopy was normal, Bone mass densitometry revealed osteopenia and hypercellular bone marrow on bone marrow biopsy. Celiac disease diagnosis was made multivitamins, mineral, intravenous iron replacement and gluten free diet replacement treatment was initiated. In order trilineage hematopoiesis, iron deficiency anemia, granulocytic hyperplasia and mild megakaryocytic hypoplasia. Both her platelet counts and white blood cell recovered uneventfully with continuing iron, calcium, vitmine D<sub>3</sub> and folic acid supplementation. The possible mechanism for this phenomenon is discussed in this report.

Introduction -

Celiac disease (CD) is a multifactorial chronic autoimmune systemic disease, triggered by gluten consumption in genetically predisposed individuals [1]. Classically the disease is manifested by symptoms of diarrhea, flatulence and malabsorption, however, it is also associated with variable systemic manifestations, including metabolic bone disease, diabetes, thyroid dysfunction and lympho-proliferative malignancies [2]. Worldwide, the prevalence of CD in the general population is approximately 1%; female: male ratio is 2 : 1 [3-7]. Several studies have confirmed the implications of celiac disease on the reproductive health of women. Celiac disease Development in cases of acute leukemia after allogeneic bone marrow transplantation (BMT) from Human leukocyte antigen identical siblings who suffered from celiac disease [11, 12]. We report the first case of celiac disease presented as pancytopenia with unexplained infertility in woman

Case report – A 21 year old Indian woman presented with primary amenorrhea, diminished secondary sexual character, asthenia, history of weight loss and chronic diarrhea. On admission her hemoglobin (Hgb) was 4.2 g/dL (normal range: 11.0-15.1 gm/dL), red cell distribution width (RDW) was 39% (normal range: 11.3-15.5%) and mean corpuscular volume was 63.6 fL (normal range: 79-97 fL). Reticulocyte count was low at 9000/mm<sup>3</sup> (normal range: 25-100 × 10<sup>3</sup>/mm<sup>3</sup>), total iron binding capacity of 486 µg/dL (normal range: 250-450 µg/dL), percentage saturation of 5 and a ferritin level of <3 ng/mL (normal range: 10-100 ng/mL), and iron studies revealed a serum iron level of 21µg/dL (normal range: 37-170 µg/dL). Erythropoietin level was elevated at 8956 mu/ml (normal range: 0-27

mu/ml). Her platelet count was  $146 \times 10^3$  /mcl (normal range: 150 - 400  $\times 10^3$  / $\mu$ L), white blood cell (WBC) count was  $3.2 \times 10^3$  / $\mu$ L (normal range: 4-11  $\times 10^3$  / $\mu$ L) with 4-6 segmented neutrophils. On the bone marrow core sections ring sideroblasts was not found. Bone marrow iron store showed decreased amounts of storage iron. Total colonoscopy was normal. Upper gastrointestinal endoscopy showed a loss of folds in the second part of the duodenum and a biopsy from the second part of duodenum showed intraepithelial lymphocytes, flattening of duodenal mucosa, lymphoplasmacytic infiltration in lamina propria, and crypt hyperplasia (Marsh class 3). Immunoglobulin A (IgA) anti-tissue transglutaminase antibodies (IgA-tTG) was markedly elevated to more than 300 u/ml. Bone mass densitometry revealed osteopenia. He was under observation in short intervals at the Oncology clinic with abnormal finding as hypercellular bone marrow on bone marrow biopsy. Celiac disease diagnosis was made multivitamins, mineral, intravenous iron sucrose complex given at a dose of 100 mg twice weekly. Replacement and gluten free diet replacement treatment was initiated. On day 14<sup>th</sup> of treatment hemoglobin increase upto 6.1 g/dL, WBC count to  $6.4 \times 10^3$  /mcl, and platelets were  $195 \times 10^3$  /mcl. We present the first case of celiac disease that presented as primary amenorrhea with pancytopenia.

#### Discussion -

A patient came to medicine OPD presenting primary amenorrhea, diminished secondary sexual character, asthenia, history of weight loss and chronic diarrhea. However, celiac disease is also associated with variable systemic

manifestations, including metabolic bone disease, diabetes, thyroid dysfunction and lympho-proliferative malignancies [2]. Given the extreme anemia and the marginal thrombocytopenia and leucopenia. In to improve erythropoiesis she was initiated on iron replacement therapy. Initially which led decrease in WBC counts and platelet. Even though iron deficiency is related with a reactive thrombocytosis [13], when the severity of the iron deficiency increases lead to normalization [14, 15] and infrequently even decrease in platelet counts [16, 17, 18]. Still The precise mechanism of this is indistinct. Cause of pancytopenia in our patient may be related to decrease density of bone and increase free radical damage to hemopoetic stem cell in bone marrow. Extremely low levels of estrogen hormone observed in our patient which is associated with bone demineralization and infertility, poor secondary sexual character in female.

### Conclusion -

Undiagnosed celiac disease is a jeopardy of infertility and pancytopenia. Pancytopenia may be due to decrease bone density result of that more exposure bone more ( haemopoetic stem cell) to free radical. Due to lack of proper nutrition, ovarian capsule could not protect newly growing follicle which lead to poorly development of estrogen hormone dependent secondary sexual character. Women seeking medical advice for this meticulous situation should be screened for celiac disease and bone density (DEXA scan). Adoption of a gluten-free diet could have a positive knock on fertility in such kind of patients. It may be a potentially modifiable (and treatable) risk factor. Futher, a large scale study prospectively study for bone

density and ovarian capsule composition to evaluate association between celiac disease and infertility in woman, pancytopenia to clarify these hypothesis.

### References –

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