

CASE REPORTS

**A CASE REPORT ON A RARE DISEASE:
DYSKERATOSIS CONGENITA**

A Case Report on a Rare Disease: Dyskeratosis Congenita

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Abstract

Introduction

Dyskeratosis congenita is a genetic disorder that has a very low incidence rate and manifests primarily through bone marrow failure. Patients have an increased chance of developing cancers and ectodermal dysplasia's that include nail dystrophy, oral leukoplasia, and the development of abnormal skin pigmentation.

Case presentation

A 22-year-old male presented with chills, fever and a sore throat. He exhibited leukoplakia on his tongue, dystrophic fingernails and a pigmented skin patch on his neck and chest. His family had a history of blood disorders and Leukaemia. The patient developed neutropenic fever during his course in the hospital (temperature 102.9°F, white blood cell counts 940, absolute neutrophil count 404, platelet count 21000, hemoglobin 9.2). He received treatment with broad-spectrum antibiotics. Bone marrow biopsy revealed normocellular bone marrow with predominance of erythrocytes along with mild dyserythropoiesis. Both chromosomal studies and fluorescence in situ hybridisation were negative, as were all hepatitis and autoantibody studies. A CT scan demonstrated splenomegaly. Following resolution of his symptoms, the patient was discharged for follow-up with a hematologist.

Discussion and conclusion

Dyskeratosis congenita is characterized by mucocutaneous changes such as skin pigmentation, dystrophic nails, and leukoplakia. The exact genetic defect has not yet been determined; however, it is believed to be inherited in an X-linked recessive manner. The bone marrow findings showed moderate aplastic anemia, the characteristic of this disease. The early diagnosis of this syndrome is essential in improving the quality of life. As demonstrated in this case, timely diagnosis will allow for better management of dyskeratosis congenita.

Keywords: Dyskeratosis congenita; Hereditary disorder; Bone marrow failure; Dystrophic nails; Leukoplakia; Skin pigmentation; Telomere; Rare disease

Introduction

Dyskeratosis congenita (DC) is a rare genetic disorder characterized by nail dystrophy, oral leukoplakia, and hypermelanosis, which cause bone marrow failure and provide an increased risk of death.^[1,2] The estimated prevalence is approximately 1 in 1,000,000 people. Due to its infrequency and due to the rarity of the immunodeficiency associated with DC, this disorder is often underdiagnosed.^[3,4] This case highlights the need for greater awareness of the complications associated with this disease.

Case Presentation

A 22-year-old Hispanic male (previously diagnosed with pancytopenia at the age of 14) presented with a few days of fever, chilliness, and painful sore throat. His other symptoms continued to worsen progressively over time and consisted of fatigue, but no changes in appetite or weight. He did not complain of a stiff neck, cough, or any gastrointestinal distress. He had a family history of blood disorders; his maternal uncle died from leukaemia. His siblings were healthy, showing no skin pigmentation or nail dystrophy.

Upon examination, leukoplakia of the tongue was noted, and his fingers and toes had markedly dystrophic toenails and fingernails. (Fig 1). He had scattered areas of pigmentation over his chest and neck. His vital signs were indicative of elevated temperature (102.9°F), blood pressure of 106/74 mm Hg, heart rate of 106/min, and respiratory rate of 20/mi. Laboratory studies were performed that revealed a low WBC count (940), absolute neutrophil count of 404, low platelet count (21,000) and low haemoglobin level (9.2).



Figure 1: Pictures of the patient showing nail dystrophy and leukoplakia.

After being diagnosed with febrile neutropenia, he was treated with broad-spectrum antibiotics. Both blood cultures and urine cultures were negative, however the chest X-ray revealed hilar enlargement, and the CT scan did not reveal any abnormalities. The sore throat worsened; therefore, antifungal therapy was initiated and symptomatic resolution was achieved.

A bone marrow biopsy and additional diagnostic testing showed that this patient had normocellular bone marrow with an excess of immature red blood cells and mild dysplasia. The results of the chromosomal analysis and fluorescence in situ

hybridization (FISH) studies were normal. Hepatitis and autoimmune disease testing were negative, and CT imaging demonstrated that the patient had splenomegaly.

Despite his history of progressive bone marrow failure, he was not considered to be a suitable candidate for a bone marrow transplantation. After the patient's symptoms improved, he was discharged from the hospital with a recommendation to follow up with the haematology clinic for further evaluation. Unfortunately, the patient did not keep his follow-up appointment.

Discussion

Dyskeratosis congenita (DC) is an extremely unusual hereditary disease that is defined by the triad of dystrophic nails, pigmented skin, and leukoplakia. These aberrations appear during childhood, with the modifications of skin and nails appearing before the age of 10, which is followed by bone marrow failure typically occurring before a patient reaches the age of 20 [5]. Our patient displayed all the standard characteristics of DC, and subsequently developed bone marrow failure, a frequent occurrence among those who have DC. The patient's genetic testing did not result in the discovery of any mutations; however, an X-linked recessive inheritance pattern is expected because of the high level of predominance in males, being reported at a ratio of 10:1 for males to females [3].

Recent developments have shown that DC is a disorder that presents as a result of faulty telomeric maintenance, which is identified through gene mutations such as CTC1, DKC1, TERC, TERT, TINF2, NHP2, NOP10, and WRAP53 that result in shortened telomeres and eventually lead to apoptosis [5,6]. The patient's bone marrow biopsy showed moderate aplastic anaemia, which is a common presenting feature in DC [7].

A significant number of DC patients die from malignancy caused by treatment and the risk of upper aerodigestive malignancies is 11 times that of the general population [8]. While there was concern for malignancy in our patient, extensive imaging and biopsy examinations confirmed the absence of any current tumours.

Dyskeratosis congenita (DC) can be diagnosed in young patients via classic mucocutaneous abnormalities, and early diagnosis is critical because of the potential for serious infections or bleeding due to bone marrow failure. The diagnostic feature of DC is the classic triad of abnormal fingernails and toenails, reticular pigmentation of the neck and upper chest, and oral leukoplakia.[9] The most serious aspect of the diagnosis is the progressive nature of the condition, which requires management to reduce morbidity

and essential to manage the underlying immunodeficiency.

Our patient did not attend follow-up appointments, which led to the worsening of bone marrow failure and neutropenic fever. Most importantly, the case illustrates the need for patient education; providing consistent follow-up; and having a interdisciplinary approach to manage DC effectively.

Conclusion

Dyskeratosis congenita (DC) is a severe multisystem disorder that frequently results in early death, mainly because of bone marrow failure. We encountered a patient who had been diagnosed with DC and had developed moderate aplastic anaemia and neutropenic fever. Our report of this case will contribute to the current understanding of DC. As research on DC progresses, our findings will be useful for both health care professionals and the small number of individuals with this rare condition.

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