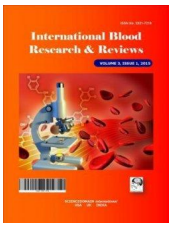

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Iron Deficiency Anaemia- A Case Report with Oral Manifestations

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Authors' contributions

This work was carried out in collaboration among all authors. Authors MCS, DAT, MC, GCS, PSF studied the case and evaluated. Authors MCS and DAT designed the case study, and wrote the first draft of the manuscript. All authors managed the literature searches. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Iron deficiency anaemia is the most common nutritional deficiency disorder in children and is worldwide in distribution. It is characterised by fatigue, weakness, pallor and koilonychias. Thus oral physician play an important role in diagnosis and thereby prevention of anaemia, as oral manifestations may be the earliest feature of the condition. The purpose of this article is to present a case of iron deficiency anaemia of unknown cause in a 16 year old female child.

Keywords: Anaemia; iron deficiency anaemia; koilonychia; haemoglobin;oral manifestations.

1. INTRODUCTION

Iron deficiency anaemia is a form of anaemia which occurs due to lack of significant iron to form normal red blood cells [1]. Iron deficiency is the most common type among all other anaemias and is frequently observed in infants and in adolescents who have menstruation [2].

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Iron deficiency develops in the body in three stages as prelatent stage, latent stage and marked iron deficiency anaemia stage [2].

World Health Organization [WHO] defines anaemia as haemoglobin level of less than 12 gm/dl in women and less than 13 gm/dl in men [3]. WHO estimates that globally 293 million young children suffer from anaemia, among which approximately 50% are due to iron deficiency [4].

Development of iron deficiency anaemia and speed of anaemia progression will depend on basal iron body stores [5]. It is typically caused by inadequate intake of iron, chronic blood loss or by combination of both [6]. Here, we present a case of Iron deficiency anaemia of unknown cause in a 16 year old female child.

2. CASE REPORT

A 16 year old female patient reported to the Department of Oral Medicine and Radiology, with a chief complaint of pain in upper front teeth region since a week. Patient gives a history of improper digestion and generalized weakness. Family history and personal history were not significant. She gives a history of regular menstrual cycle which lasted for 5 days and she didn't give any history of hyper menorrhea.

Fig.1. Patient's extraoral front profile

Fig.2. Pallorness seen on the right buccal mucosa with yellowish tinge

Fig.3. Pallorness seen on the left buccal mucosa with yellowish tinge

Fig.4. Loss of filiform papillae over the dorsum of tongue

Fig.5. Black Pigmented lips with angular cheilitis

Fig.6. Hands showing nails with Koilonychia

Fig.7. Legs showing nails with Koilonychia

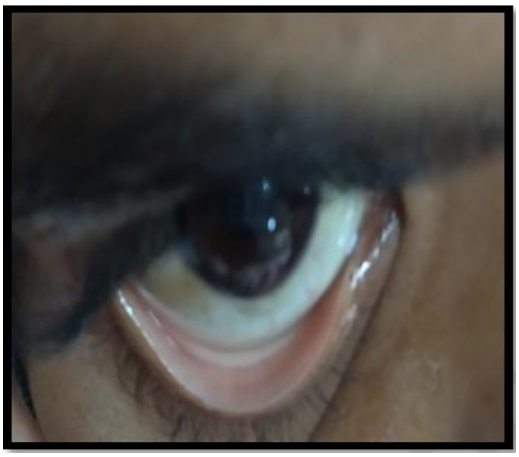

Fig.8. Pallorness seen over lower palpebral conjunctiva

On examination, all vital signs were stable. No bruising, petechiae, rash or lymphadenopathy was evident. Patient's extra oral appearance was normal without gross facial asymmetry [Fig.1]. On intraoral examination yellowish tinge with paleness in relation to right and left buccal mucosa, melanin pigmentation was present in relation to right posterior buccal mucosa and lateral borders of tongue [Figs.2, 3]. Loss of filiform papillae over the dorsum of tongue [Fig.4]. Dark pigmented lips, angular cheilitis were present [Fig.5].Pallor and Spoon shaped nails [KOILONYCHIA] were seen [Figs.6,7]; pale lower palpebral conjunctiva was seen [Fig.8]. Dental caries present in relation to 36,37,46,47. Root stumps present in relation to 22. On palpation there was no burning sensation. Based on clinical findings, provisional diagnosis of Iron Deficiency anaemia was made and patient was advised to get all the laboratory investigations.

3. DISCUSSION

Iron deficiency is usually defined as the decrease of the total content of iron in the body [7]. Approximately, 1.62 billion people are affected by anaemia globally,which accounts for 24.8% of population [8]. The predominant cause of microcytic hypochromic anaemia in infancy and in childhood is Iron deficiency anaemia[9] . Iron deficiency symptoms are secondary to anaemia and include weakness, headache, fatigue, koilonychia [spoon shaped nails],exercise intolerance [1,10]. Oral signs and symptoms of anaemia are well recognised and easily detectable which include glossitis, glossodynia,

pallor of oral mucosa, angular cheilitis, erythematous mucositis [11]. These oral changes occur as a result of basic changes in metabolism of oral epithelial cells [8].

Iron deficiency anaemia and B thalassemia triat are close differentials for the hypochromic microcytic anaemia. However,low serum ferritin levels in association with high RDW is helpful in distinguishing Iron deficiency anaemia from Thalassemia. High performance liquid chromatography [Electrophoresis]will confirm thalsseima if present [12]. In the current case laboratory investigations showed extremely low serum ferritin levels of 1.5 ng/ml,high RDW of 25.2% and normal HbF, HbA1, HbA2 levels .

This is a rare unknown case of severe Iron deficiency anemia observed in a young female child.Here,in this case patient experienced the symptoms of fatigue and generalized weakness which is due to reduced oxygen carrying capacity by the deficiency of Hb.The laboratory investigations reports of Hb concentration, packed celll voume, MCV, MCH reveals the evidence for anemia .The reasons for iron deficiency were still unclear and further evaluations are necessary to rule out the actual etiology.

In the present case the patient presented the features of angular cheilitis,pallor which were similar to the findings seen in case presented by Halim N, et al.[8] in a 68 year old female patient with angular cheilitis, atrophic glossitis,and pallor which was diagnosed as Iron deficiency anaemia based on oral manifestations.Revoori et al[1] , in 2015 presented a case of iron deficiency anemia in which the laboratory investigations revealed a diagnosis of Iron deficiency anemia but of unknown etiology similar to our case.

Based on all the above clinical,laboratory findings, a final diagnosis of Iron deficiency anamia was made and she was referred to general physician for further assement following which dental treatment was provided.Patient was prescribed to take oral iron supplements, and other vitamins, Iron fortified supplementary food products, and along with that frequent blood transfusions were advised. After 2 weeks her haemoglobin levels were raised from 3.4[before treatment] to 6.5.

Clinical Laboratory Investigations

Parameters [UNITS]		Test values	Normal values
Hemoglobin[gm%]		3.4	11.5-16
Total RBC count[mil/mm3]		2.33	3.8-5.8
Total WBC count[/mm3]		5400	4000-11,000
Platelet count[lakh/mm3]		3.4	1.5-4
Packed cell volume[vol%]		17.6	3.6-4.6
Mean corpuscular volume[fl]		69.6	80-100
Mean corpuscular hemoglobin[pg]		13.4	27-32
RDW[%]		25.2	11-14.5
Erythrocye sedimentation ratio[mm/hr		20	0-20
Recticulocyte count[%]		1.2	0.5-2.5
Serum folic acid[ng//ml]		24	3-17
Serum iron[mcg/dl]		11	50-190
Serum feritin[ng/ml]		1.5	7-140
Total iron binding capacity[mcg/dl]		37.6	250-400
Electrophoresis	HbF[%]	<1.00	<1.50
	HbA1[%]	88.70	83.24-90.79
	HbA2	2.00	1.5-3.5
Stool occult blood analysis	Negative		
Peripheral blood smear	RBC-Severe Anisocytosis,Poikilocytosis, Hypochromic mycrocytic		

4. CONCLUSION

In conclusion, as the oral cavity reflects general health status of individual, oral manifestations may be the earliest feature of Iron deficiency anaemia. Therefore oral physicians play an important role in diagnosis and thereby its treatment.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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