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**Research Paper** 

Pathology

## McCune-Albright syndrome (MAS) : A case report

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ABSTRACT

McCune-Albright syndrome (MAS) (1,2) is a rare, heterogenous, clinical condition caused by a rare genetic mutation. The classical triad consists of polyostotic fibrous dysplasia (FD), skin hyperpigmentation (café-au-lait spots), and endocrine dysfunction, frequently seen in females as precocious puberty. Patients with MAS display mosaicism of activating somatic mutations of the alpha-subunit of Gs. FD, mostly polyostotic, causes fractures needing surgical and orthopedic treatment. Since previous studies have suggested the overall prognosis of patients with McCune-Albright syndrome to be non-fatal, recent data have drawn our attention to non-endocrine affections, including hepatobiliary dysfunction and cardiac disease, which are probably an important risk factor for early death. In summary, the clinical picture in MAS is related to its mosaic nature, i.e. any cell, tissue and organ in any site of the body could be affected to varying degrees, ranging from one or two mild clinical signs with excellent long-term prognosis to a severe life-threatening multiorgan disease.

We describe a male patient with MAS having multiple café-au-lait macules and deforming polyostotic fibrous dysplasia involving skull and femur with endocrine abnormality.

# KEYWORDS : Café-au-lait spots, fibrous dysplasia, Gs alpha gene.

### Introduction:

McCune-Albright syndrome (MAS) is defined as the association of polyostotic fibrous dysplasia (PFD), precocious puberty, café au lait spots and other endocrinopathies. The cardinal pathogenetic mechanism appears to be an activating somatic mutation of the cellular Gs alpha gene which is demonstrated in the café au lait skin lesions, the fibrous dysplastic bony lesions, the gonadal tissues and in various hyper functioning endocrine glands. Mutation<sup>(3)</sup> in gene for the alfa sub unit of G protein, leading to persistant activation, resulting in increased levels of cAMP. This results in mitogenesis & hyperfunctionig of the cell.Mutations in early embryogenesis leads to severe lesions. Thus, the clinical presentation of each individual is dependent on the particular distribution of affected cells, causing a broad spectrum of endocrine and non-endocrine manifestations. Typical endocrinopathies are precocious puberty, hyperthyroidism, growth hormone excess, hyperprolactemia, and hypercortisolism. The onset of these manifestations is usually during infancy and childhood. Since specific treatment is required, the prognosis depends on the severity of each individual endocrine manifestation. Additionally, there are non-endocrine manifestations, such as fibrous dysplasia of bone (FD), renal phosphate wasting, and skin hyperpigmentation, i.e. café-au-lait spots.

## **Case details**

Male child of 12 years came with a C/o swelling over right side of lower jaw since 3 months which gradually progressed to present stage. It is associated with loosening of nearby tooth. There is no pain or fever and there is no history of trauma. H/o appearance of pubertal changes before nine years of age and dark coloured spots over the body since birth. History of symptoms suggestive of Acromegaly and rickets are seen. No history or symptoms suggestive of any other endocrinopathies. No GIT/CNS disorders .There are no other swellings in the body.

## **General examination**

Short stature, frontal bossing, acne and bushy eye brows. Well developed axillary and pubic hair, knock knees and scaly, dark, eczematous lesions on feet. Dark patches on right side of neck and lower back -Café – au – lait spots.(Fig.1)

#### Local examination

Single oval shaped 6 x 3 cm swelling in the centre and slightly to the right side of mandible.Intra oral examination shows 4 x 3 cm swelling of gum anterior to incisors and right canine. Mucosa over it is reddish and shows increased vascularity.Nearby tooth is mal aligned.Dental formula-2122/2122. .(Fig.2)

#### Investigations

FNAC was done followed by biopsy from the jaw swelling along with radiological and biochemical studies. Orthopantogram shows lytic lesion.(Fig.3)X-ray shows bowing and lytic lesion in the neck of femur and basal sclerosis of skull bones.No abnormality is seen in the spine & ribs, but for cardiomegaly which is may be due to associated MS-MR detected by 2Decho. MRI revealed normal pituitary and expanded facial bones.2DECHO features are s/o Mitral stenosis with Mitral regurgitation.FNAC of jaw swelling shows Giant cell lesion of bone.Histopathology shows Fibrous dysplasia.(Fig.4)

#### **Discussion:**

Classical form is characterized by a triad of physical signs like Caféau-lait macules (CALMs) following Lines of Blaschko like "coast-of-Maine" due to cAMP-mediated tyrosinase gene activation in melanocytes,Polyostotic fibrous dysplasia due to the changes in osteoblastic proliferation and differentiation and Autonomous, hyper functioning endocrinopathies. Malignant transformation<sup>(4)</sup> to sarcomas is seen in fibrous dysplastic lesions in less than 1% of MAS mostly osteosarcoma.

#### **Conclusion:**

No definite treatment is available for MAS and, to date, prenatal diagnosis is not possible. But, recently with polymerase chain reaction-based techniques, activating mutation in the peripheral blood of these patients has been successfully detected, which might help in diagnostic as well as therapeutic areas.<sup>(5)</sup>Mortality/Morbidity is due to fractures, malignancies and endocrine disorders.

#### Images



Fig.1.Café'au lait macules



Fig.2.Swelling over right side of lower jaw



Fig.3 .Orthopantanogram-lytic lesion in mandible



Fig.4.Spindle cells in whorls and storiform arrangement, Bx1218/10(10X)



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