



International Healthcare Research Journal (IHRJ)

E - I S S N : 2 4 5 6 - 8 0 9 0

Volume 6, Issue 4 (July 2022)



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Name of Publisher & Publication Address

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“The Rainbow”: Mission Indradhanush

AMAN KUMAR^{1*} , UMA SRISHTI²

Dear Editor,

Mission Indradhanush is an actual mission which was launched on 25th December, 2014 to provide at least 90% of complete immunization coverage to children not more than 24 months & pregnant women as well.¹

“Let no children suffer from any vaccine-preventable disease” – PM Narendra Modi²

Why Indradhanush???

Indradhanush means “rainbow.” We all know that there are 7 colors in rainbow. Mission Indradhanush consists of immunization against 7 childhood diseases that may threaten life of the individual & which includes; Diphtheria, Tetanus, Tuberculosis, Hepatitis-B, Measles, whooping cough (pertussis), Polio.

7 rainbow colours represent immunity against 7 childhood diseases.

What are the objectives of this mission???

It will make certain that all children upto 24 months & the pregnant as well are fully immunized with all available resources & vaccines.

The Long term goal is; strengthening the health system through collaboration with central & state government and development partners, identification and levelling of gaps in existing routine immunization program, human resource development and sustainable effort in the expansion of routine immunization micro-plans.

Why full immunization is essential???

Every year 5 lac children die due to that can be prevented by vaccination. Children that are Partially immunized or unimmunized, are at greater and severe risk of dying than fully immunized children. It can also prevent large scale outbreaks by keeping control over the disease in an area & thus, reducing

the burden on an unstable health system.

Hence, supporting the fact that Full immunization is a priority to overcome increasing child mortality and improving overall health of country's future.

What should the parents do???

- Contact nearest ASHA (Accredited Social Health Activist) or ANM (Auxiliary nurse midwifery) for the location of health centers.
- Get their child vaccinated routinely;
- If a child below 2 years missed any vaccine, vaccination can be done during IMI rounds.

Facts & Dates to remember.....!!!

- On 25th December 2014, this mission was set in motion by the Ministry of Health and Family Welfare in phases.
- A total of 201 districts of the whole country were covered in the Ist phase of Mission Indradhanush (MI) & was put into action on 7th April, 2015.
- And a total of 352 districts of the country have been included in the IInd phase of this scheme which was launched on Oct 7, 2015.
- Phase III of MI was set afloat on 7 April 2016 and it covered 216 districts.
- Phase IV of MI (launched on 7 February 2017), covered the states of Manipur, Arunachal Pradesh, Meghalaya, Assam, Mizoram, Nagaland, Tripura, and Sikkim.
- Intensified Mission Indradhanush (IMI) 1.0 was launched in 8 October 2017 to improve immunization reach to > 90% by December 2018.
- IMI 2.0 was put into act by government of India from December 2019-March 2020.
- IMI 3.0 was a nationwide vaccination campaign which celebrated twenty five years of PPP, which is Pulse Polio Program (2019-20) and was set in motion from February 2021 to march 2021.
- Union health minister Mansukh Mandaviya (on



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Submitted on: 09-Jul-2022; Accepted on: 28-Jul-2022

Monday, 7th February 2022), launched the IMI 4.0

- IMI 4.0 has 3 rounds to be completed in 416 districts.
- 11 states conducted IMI 4.0. (Uttarakhand, Gujarat, Gujarat, Chhattisgarh, Meghalaya, Assam, Nagaland, Mizoram, Rajasthan, Sikkim, Tripura) from Feb-April 2022 & From April to May 2022, remaining 22 States (including Himachal Pradesh, Maharashtra, Arunachal Pradesh, Manipur, Andhra-Pradesh, Odisha, Puducherry, Bihar, Delhi, Goa, Tamil Nadu, Punjab, Haryana, Jharkhand, Telangana, Dadra & Nagar Haveli, Uttar Pradesh, Daman & Diu, Kerala, Karnataka West Bengal, Madhya Pradesh, A&N Islands).

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Cite this article as:

Kumar A, Srishti U. “The Rainbow”: Mission Indradhanush. Int Healthc Res J. 2022;6(4):LE1-LE2. <https://doi.org/10.26440/IHRJ/0604.07550>

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Mental Health: Roots and Wings

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ABSTRACT

Mental health is often dismissed. Unless we recognise that mental health is as debilitating as physical health we can never say we are a caring society. Mental health is silent, the stigma attached still prevails and prevents thousands from talking and seek help. Anything that helps and opens a margin of help for them should be encouraged. We need to breakthrough these old rooted stigma and make it a universal message that “Your Mental Health is a priority”.

INTRODUCTION

Mental and physical health are equally important for overall health. Mental health awareness is the only portal for mental health mediation in India. In India where we live in a communist society. Occasionally by being a part of this collaborative we tend to ostracise people within our own community, who may not fit the norm. These individuals could include people with mental illness.

ROOTS: DIFFICULT TO BLOW AWAY

Shame against people with mental illness is a unrestrained problem that pollute the Indian society deeply. This ignorance is one of the main reason why people with mental illness are so reluctant to seek help. According to National Mental Health Survey around 14% of Indian population suffers from mental illness and the figures keep on adding every year. India has been ignorant to this issue for times. This explains why the mental health sector remains severely under-resourced till this day. A severely understaffed sector serves the world's second largest population with only 0.75 psychiatrists for every 100,000 patients.

LACK OF KNOWLEDGE LEADS TO REJECTION

The lack of knowledge about mental health causes people to overlook and dismiss the signs that someone needs help for example: For someone suffering from depression, observable symptoms such as low motivation and sleeping excessively might be mistaken for laziness. Mental illness can be invisible, people

suffering from it lives in denial due to the lack of knowledge and access to the professional help. This growing crisis in dealing with mental health issues is further compounded by the deep-rooted social stigma.

IGNORANCE IS VOLUNTARY MISFORTUNE

We live in a society where people understand and watch for physical health, we are so, so accepting of any body part breaking down, other than our brains. That's the stigma and that's ignorance and this ignorance has created a society that doesn't understand mental health.

A person can have depression and still smile and make jokes, a person can feel suicidal and still turn up to work every day and appear fine. Talking about mental health is not attention seeking. People die in silence everyday due to this judgment and rendering them unable to seek help. Our society needs to acknowledge these facts. The increased suicide rates confirm the helplessness regarding this issue. The government needs to offer more to the nation regarding this issue. Wings: a much-needed change.

Before COVID-19 India never prioritized mental health. Due to Covid-19 mental health challenges have only grown which overburdened the system. But this led people to self-realization. Discussion about mental health has increased due to this pandemic where people are more open about their issues. Where lockdown was important to control the situation still the lockdown also forced the people to be confined to their homes, with irregular eating and sleeping habits which has led to discomfort, agitation, aggravation and a range of neuropsychiatric symptoms.

NGOS KNUCKLING DOWN MENTAL HEALTH HURDLE

The pandemic has already left deep scars both to the body and the mind. To overcome these problems certain NGOs have been set up which are focusing in combating Mental Health issues



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Submitted on: 09-Apr-2022; Accepted on: 19-Jul-2022

One of the leading non-profits, The Live Love Laugh foundation founded by actor Deepika Padukone who herself once was a victim of depression now has prevailed over it and also working for the betterment of people and society going through the same.

Facebook is also working with the organisation to stop suicide attempts from being live-streamed. There are also certain known foundations which are doing tremendous jobs such "The Banyan", "Mindroot Foundation", "The MINDS Foundation" and many more. Newspaper, social media and the influencers has played a big part in improving the picture.

Greater awareness of mental health is the key in creating more acceptance and conversations and it can only be seen if people understand its prime importance. The changes are slow but much needed than ever.

CONCLUSION

Even though the perception of India is changing towards mental health. But somehow this change is limited to cities. The rural areas are still embedded in the old-rooted stigmas and hinders the growth and acceptance about the topic. This can only be changed by the mental health awareness programs on a large scale. Today, the average citizen is more aware in regards to Mental health. While we have learned a lot, there's still so much more we can do to grow as a society.

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Cite this article as:

Singh A, Baglwan A. Mental Health: Roots and Wings. *Int Healthc Res J*. 2022;6(4):SC1-SC2. <https://doi.org/10.26440/IHRJ/0604.07552>

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Management of Oral Pyogenic Granuloma: A Case Report

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Granuloma pyogenicum, also referred to as a pyogenic granuloma, is a typical, acquired, benign vascular tumor that develops in tissues like the skin and mucous membranes. The correct term is lobular capillary hemangioma. Is typically brought on by a variety of stimuli, including mild local irritation, acute damage, hormonal variables, or specific types of medications. Pyogenic granuloma often do not develop when the base and the causes of it are removed. The case of pyogenic granulomas treated surgically as well as electro cautery are presented in this paper.

KEYWORDS: Pyogenic Granuloma, Benign Neoplasm, Hyperplastic Lesion

INTRODUCTION

Pyogenic granuloma is one of the most commonly seen benign mucocutaneous lesion. This term is a misnomer as the lesion is neither granulomatous nor it contains pus. It was originally described in 1897 by two French surgeons, Antonin Poncet and Dor.¹ The scientifically accurate term for this entity is the lobular capillary hemangioma.²

It is most commonly seen on the marginal gingiva, but lesions have been reported on palate, buccal mucosa, tongue, and lips. The skin of the face, neck, upper and lower extremities, as well as the mucous membranes of the nose and eyelids, have all been observed to be affected extra orally. The lesion manifests as a single, very friable, crimson, pedunculated papule. Less frequently, it could show up as a sessile lesion. It exhibits quick exophytic development and frequently ulcerates its surface. On rare occasions, it is seen along the digestive tract.

These benign growths, also known as “epulides,” have a complex genesis that includes aggravating factors such as worn-out dentures, gum disease, smoking, chewing tobacco, gingivitis, and periodontal disease), hormone disruptions (during pregnancy), and blood dyscrasias. It is known as granuloma gravidarum, granuloma of pregnancy, or epulis gravidarum when it develops in the intraoral mucosa in the context of pregnancy, particularly on the gingiva, typically in the second or third trimester.³

As it is a non-neoplastic growth, excisional therapy is the treatment of choice but some alternative

approaches such as cryosurgery, excision by Nd:YAG Laser, flash lamp pulsed dye laser, injection of corticosteroid or ethanol, and sodium tetradecyl sulfate sclerotherapy have been reported to be effective. The conventional mode of surgical excision of epulides is with the use of a scalpel blade. However, in dentistry, since 1928 electrosurgery has been used for soft tissue procedures like gingivectomy, gingivoplasty, soft tissue growth excision, crown lengthening, etc.⁴ It has a coagulative effect and hence provides a clear, bloodless view of the operating field. It is available with multiple tips which are angulated and hence cuts can be easily made.⁵

CASE REPORT

A 30 years old female patient presented to the Department of Periodontology, SDDC, Parbhani, with a chief complaint of pain and swelling on gums at upper back region of the jaw lasting 3 months and which was gradually increasing in size. A clinical examination of 27 and 28 revealed a localized gingival swelling of cm 12mm size with clear signs of inflammation was present (figure 1). The swelling was a smooth exophytic lesion manifested as a small erythematous. papule on a pedunculated base which was hemorrhagic with spontaneous bleeding on probing the area . The lesion was painless and patient had no other symptoms other than mild discomfort due to the growth. Physical examination revealed no other abnormalities, and there was no cervical lymphadenopathy. On hard tissue examination there were moderate supra- and subgingival calculus with moderate gingivitis. Grade 1 mobility was present



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Submitted on: 14-May-2022; Accepted on: 13-Jul-2022

in tooth. The patient's medical history was uneventful.



Figure 1. Pre-operative view

In light of all of the aforementioned characteristics, a preliminary diagnosis of pyogenic granuloma was made, and an excisional biopsy was scheduled. First, a traditional non-surgical therapy with full mouth scaling and root planing was carried out. While performing scaling and curettage, there was significant bleeding. However, by applying pressure with gauze, the bleeding was stopped. The patient was instructed to perform and maintain oral hygiene by brushing twice daily and using a 0.2 percent chlorhexidine mouth rinse twice daily. After two weeks of observation, there was a gradual reduction in the growth.

The surgical management of the lesion was planned. Following local anesthesia, the enlarged localized lesion was removed up to the lesion's base using a 15-no. B.P. blade (figure 2 and figure 3). The remaining soft tissue adjacent to the tooth was entirely removed using a loop electrode and helped to prevent the lesion from recurrence (figure 4). Following excision, a periodontal dressing was placed for a week to hasten healing and protect the wound from injury. For one week, analgesics and antibiotics were recommended. The excised tissue was sent for histopathological examination. Based on the histopathological report the lesion was confirmed as Lobulated Pyogenic granuloma.

DISCUSSION

Pyogenic granuloma is an inflammatory hyperplasia formed as a result of an exaggerated reaction of connective tissue to some localized minor lesion or any underlying irritation. Irritation factors can be dental

calculi, poor oral hygiene, some unspecified infection as well as over contoured restorations.⁶



Figure 2. Excision of the lesion using scalpel

In the present case report, presence of pyogenic granuloma has been described in relation to pregnancy, local factors such as absence of interproximal contact, presence of calculi and poor oral hygiene indexes.



Figure 3. Excised tissue

The differential diagnosis of pyogenic granuloma includes peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma, kaposi's sarcoma, bacillary angiomatosis, non-hodgkin's lymphoma, angiosarcoma, and metastatic cancer. Peripheral giant cell granuloma is clinically similar to PG, but presence of bone resorption and appearance of the



Figure 4. Post-operative view after removal of remaining tissue using a loop electrode

multinucleated giant cell are differentiating features. Peripheral ossifying fibroma can be distinguished by the consistency, texture, and the lighter color. Hemangioma is a developmental disorder, commonly seen on the tongue. It can be multinodular and bluish red in color. They can be easily diagnosed by a chairside “Diascopy” procedure. Kaposi’s sarcoma and bacillary angiomatosis can be differentiated as they are AIDS related and show specific histopathological picture. A gingival non-Hodgkin’s lymphoma is usually found to be an asymptomatic gingival enlargement or mass resembling a pyogenic granuloma which requires histopathological confirmation for diagnosis.

Pyogenic granuloma can be differentiated from angiosarcoma by its lobular growth pattern and histological picture showing well-formed vessels and cytologically bland endothelial cells. Metastatic tumors can also show clinical resemblance to pyogenic granuloma. However, the microscopic appearance will differentiate it as the tumor of origin.⁷

There are two types of pyogenic granuloma from a histological perspective: the first is distinguished by proliferating capillaries that organize in lobes. The term for this kind of PG is lobular capillary hemangioma (LCH). Vascular growth resembling granulation tissue makes up the second category (non LCH). The LCH lobular area has a significantly higher concentration of tiny diameter capillaries than the non-LCH central region. The differences mentioned

imply that these two histological categories are distinct entities. A pyogenic granuloma examined under a microscope reveals significant vascular proliferation that resembles granulation tissue. Endothelial fibrotic stroma is visible, and there are numerous capillaries covered in thick endothelial cells. Stratified epithelium may become ulcerated, thinning, or hyperplastic. The purulent discharge that gives this form of lesion its name is not always present.¹⁰

With respect to treatment, Powell described use of Nd YAG laser to excise this lesion, since lesser bleeding risks are incurred upon when comparing it with other surgical techniques. Verma et al reported use of a flash lamp pumped pulsed dye laser in a mass of granulation tissue which had not responded to conventional treatments; they reached the conclusion that tissue responded favorably.⁹

Nevertheless, up to the present moment, most reports suggest use of surgical excision as treatment of choice. After lesion excision, it is recommended to perform curettage of underlying tissue, performing an excision with 2 mm margins in the periphery and at a depth that will include periosteum. Moreover, any foreign body, calculus or restoration that might be associated to onset of pyogenic granuloma must be removed.¹⁰

In the current case report, two different modalities for excision: scalpel and electrosurgery were used. When comparing the handling properties between the two modes of treatments, it was observed that scalpel had ease of handling. The incisions were precise with well – defined margins. There was no lateral tissue damage and was economical. However, there was need of anesthesia, bleeding during procedure which reduced the visibility and increased time required for the procedure.

Electrosurgery had the benefit that the electrode easily cut through tissues, hemostasis occurred right away, and the tip self-infected. However, it had a number of drawbacks, including the necessity for anesthetics, the smell of burned tissues, poor tactile perception, risk of damaging the underlying bone. It is not recommended for people who have cardiac pacemakers.⁷

Due to all the reasons that have been given, it is advised that in order to make an accurate diagnosis, it is crucial to observe clinical symptoms and obtain a thorough clinical history of the patient’s systemic conditions as well as any local factors that could trigger an excessive tissue response and the formation of a pyogenic

granuloma. Histological analysis is always required to confirm a clinical diagnosis. The oral hygiene index was one of the most significant contributing elements to be taken into account, based on what was seen in the current case study; as a result, physiotherapy must be regarded as the first step in the treatment of pyogenic granulomas. Additionally, it would be prudent for the patient to get supportive periodontal therapy in these circumstances.^{8,9}

It has also been noted that numerous studies have examined various treatment modalities, including cryosurgery; flash lamp pumped pulsed dye laser, and traditional surgical excision, with high rates of success and low rates of relapse. Nevertheless, it must be remembered that surgical excision can be carried out in a single session using standard surgical equipment, as opposed to alternative treatments that need for multiple sessions as well as specialized knowledge and methods. This method is simple to use in routine clinical practice, which increases patient comfort.¹⁰

CONCLUSION

It is clear from the presentation of this research that a variety of etiological factors may have combined to push the inflammatory tissue over the line from simple gingivitis to granuloma development. Since nerves do not develop within the reactive hyperplastic tissue, the lesion was painless. The most effective method for reducing lesion recurrence is surgical excision. Therefore, effective treatment planning and accurate diagnosis should also be taken into account. The mucogingival complex should be preserved and improved while the lesion is managed carefully.

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Cite this article as:

Shiradhonkar A, Thakur R, Jangid M, Kasare N, Kurien VT, Khan S. Management of Oral Pyogenic Granuloma: A Case Report. *Int Healthcare Res J.* 2022;6(4):CR1-CR4. <https://doi.org/10.26440/IHRJ/0604.07549>

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Source of support: Nil, Conflict of interest: None declared

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Lamotrigine Induced Hypersensitivity in Aged: A Case Report

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Lamotrigine is an antiepileptic drug widely used to control seizures. It has many adverse events but in rare instances, it can cause drug hypersensitivity syndrome (DHS). We describe a case of lamotrigine induced drug hypersensitivity characterized by febrile erythema and eosinophilia. The suspect drug was replaced by valproate leading to marked improvement.

KEYWORDS: Lamotrigine, Hypersensitivity, Drug Reaction

INTRODUCTION

Lamotrigine is an antiepileptic medication which controls seizures or fits by decreasing the abnormal and excessive activity of the nerve cells in the brain. Common side effects of lamotrigine include headache, dryness in mouth, sleepiness, dizziness, joint pain, agitation, tremors, tiredness, irritability, and gastrointestinal disturbance. Lamotrigine is a recent anticonvulsant indicated in all forms of epilepsy. It is made up of a triazinic compound that causes stabilization of neuronal membranes by acting on voltage-gated sodium channels and inhibits the action of excitatory neurotransmitters, particularly glutamate. Lamotrigine is primarily metabolized in the liver by glucuronide conjugation and does not seem to interfere with cytochromes P450, unlike aromatic antiepileptics (phenobarbital, phenytoin, carbamazepine, etc.).^{1,2} It can induce hypersensitivity syndrome clinically and biologically similar to that observed with standard antiepileptic drugs.

CASE REPORT

A 79-year-old man was admitted at our clinic for a febrile rash. His history was marked by pulmonary embolism, vascular dementia treated with donepezil and secondary epilepsy treated with lamotrigine 50 mg/day for 4 weeks. Other medications were lysine acetylsalicylate 75 mg/day and mirtazapine 15 mg/day. Four days prior to hospitalization, the patient suddenly had a febrile maculopapular rash of all four limbs, gradually spreading to the trunk. Immediately suspecting an adverse effect of lamotrigine, this treatment was immediately discontinued and replaced with 200 mg/day of valproate. On admission, physical

examination found fever of 38°C and morbilliform pruritic skin erythema affecting the face, trunk, and limbs. There was no mucosal involvement. Neurological examination found no meningeal syndrome or focal signs. The cardiopulmonary and digestive examinations were normal. No lymphadenopathy or organomegaly was detected. As of admission, donepezil and valproate treatments were discontinued and anticonvulsant treatment with clonazepam was initiated. From a laboratory perspective, there was an inflammatory syndrome with C-reactive protein (CRP) of 72 mg/L, hypereosinophilia of 2,200 then 6,000 elements/mm³, as well as increased muscle enzymes. Liver parameters were normal. The viral and bacterial serologies were negative. A skin biopsy found activated perivascular lymphocytic infiltrate with the presence of polymorphonuclear eosinophils consistent with drug-induced toxidermia. An electroencephalogram was unremarkable. Erythema of the skin began to regress spontaneously three days after valproate discontinuation and then disappeared permanently within one week. The CRP and polymorphonuclear eosinophil count normalized in two weeks.

DISCUSSION

The diagnosis of drug hypersensitivity syndrome to lamotrigine was retained in reported case. The time to onset of rash was less than eight weeks, the association with hypereosinophilia and biological inflammatory syndrome, the absence of any infectious cause, the histological appearance, and the favorable course after discontinuation of the implicated drug led to this



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Submitted on: 15-Apr-2022; Accepted on: 26-Jul-2022

diagnosis. If a skin reaction to lamotrigine was rightly suspected initially, the immediate introduction of valproate as a switch to lamotrigine helped to decrease lamotrigine elimination and promote the persistence of clinical and biological symptoms of drug hypersensitivity syndrome. It should be emphasized that although the patient is on donepezil, the notable increase in muscle enzymes could be connected with cases of rhabdomyolysis due to lamotrigine already described in the literature.³ DHSs secondary to the intake of aromatic anticonvulsants are metabolically different from those induced by lamotrigine, even if all result from a T-cell oligoclonal response.^{2,4} There is no evidence of cross-allergy between these anticonvulsants.^{2,5} However, the combination of lamotrigine with aromatic antiepileptic drugs or sodium valproate increases the risk of skin reaction^{6,7}, whether or not these drugs are prescribed simultaneously or even consecutively as shown in our case. Thus, in a published series, the 26 cases of lamotrigine-induced DHS all occurred after treatment combining this drug with either valproate in 60% of cases or with conventional anticonvulsants in 40% of cases.⁶ As a rule this risk when taking lamotrigine occurs within eight weeks of treatment initiation and skin reactions have no specificity in relation to those observed with other anticonvulsants. These allergic skin reactions are promoted by an overly high initial dosage and/or a combination with valproate known to double the half-life of lamotrigine by inhibiting its catabolism.^{2,6} This combination increases the incidence of rash by 21% in adults and by 34% in children.⁷ Aromatic or nonaromatic anticonvulsant drugs are the drugs most commonly involved in the unpredictable onset of DHS. Its clinical presentation is extremely variable, ranging from simple fever to multisystemic involvement with or without hypereosinophilia.^{2,8} The clinical study of the 26 observations did not reveal any notable difference between the DHS cases and those observed with the other anticonvulsants, although these authors found less frequency of hypereosinophilia and lymphadenopathy and constant presence of fever.⁶ Recovery is the rule after discontinuing the implicated drug within three to eight weeks.² The majority of skin manifestations are benign and regress upon treatment discontinuation, however, severe reactions occur in one in every 1,000 cases similar to Stevens-Johnson syndrome or Lyell's syndrome.^{7,9} These clinical and laboratory features of DHS have no specificity in the elderly subject. Similarly, current literature data do not indicate that the frequency of DHS is higher in this population. In any case, the occurrence of such a

syndrome in a readily multi-pathological population can be an important factor in morbidity and mortality rates.

CONCLUSION

In conclusion, although rare, this type of DHS must not be ignored in the geriatric setting where lamotrigine is readily prescribed.

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Cite this article as:

Rahmann M, Shreshta P, Hasan A. Lamotrigine Induced Hypersensitivity in Aged: A Case Report. Int Healthc Res J. 2022;6(4):CR5-CR7. <https://doi.org/10.26440/IHRJ/o6o4.o7528>

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Source of support: Nil, **Conflict of interest:** None declared

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Assessing the Prevalence of Molar-Incisor Hypomineralisation among School Children in a North Indian District

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INTRODUCTION: Molar Incisor Hypomineralisation (MIH) is a dental condition which affects the first permanent molars ranging from white opacities to complete breakdown on the teeth and is considered as a matter of global concern.
AIM: To assess the prevalence of MIH in school children aged 8-12 years in District Bulandshahr, Uttar Pradesh, India
MATERIALS AND METHOD: This cross-sectional study was conducted by examining 793 school children aged 8-12 years in various schools. ental examinations were conducted by four standardized examiners and four recording assistants who entered data in a pre-tested and pre-validated proforma. MIH was clinically identified by the ten-point scoring criteria given by European Academy of Pediatric Dentistry (EAPD) 2011. Data was analyzed using SPSS version 24.0 and the student's t-test and multivariate logistic regression.
RESULTS: Out of 793 children, 186 were diagnosed with MIH (23.5%) with its prevalence reported to be more in boys (102, 54.8%) in comparison to girls (84, 45.2%). The most commonly affected tooth was the mandibular left first permanent molar (22.4%). There was a statistically significant difference reported between gender ($p=0.03$) and maxillary and mandibular molars ($p=0.02$), whereas there was no significant difference among MIH involvement on the site (right and left).
CONCLUSION: As per the data suggested by the present study, it is important that students be screened regularly for the same so that they can be provided early and prompt treatment.
KEYWORDS: Molar Incisor Hypomineralisation, Molars, Screening, Diagnosis

INTRODUCTION

Molar incisor hypomineralization (MIH) is the hypomineralization of the teeth, which is of systemic origin of one to four permanent first molars and are frequently associated with affected incisors.¹ This dental defect is clinically seen as a white to yellow to brown demarcated enamel opacities of different colors, which occasionally undergo posteruptive breakdown due to the presence of soft and porous enamel on the surface.²

The prevalence of MIH ranges from 2.8% to 44% as per the results of various authors.³ In the literature, MIH prevalence varies by country, region, and age group studied.⁴ Examination of teeth for such a defects should be done in children aged 8 years as all first molars and most incisors would have erupted in the oral cavity. The term molar-incisor hypomineralisation (MIH) was first introduced in 2001 by Weerheijm et al.⁵ Although the causative mechanism of MIH is still unclear, its clinical presentation of localised and asymmetrical lesions suggests do point out a systemic origin with the disruption in the amelogenesis process, which most probably occurs in the early maturation

stage or even earlier at the late secretory phase of tooth development.⁶ Due to its prevalence and it being a global concern, this present study was conducted with the aim to assess the prevalence of MIH in school children aged 8-12 years in District Bulandshahr, Uttar Pradesh, India

MATERIALS AND METHOD

The present study was designed as a cross-sectional study conducted among school children aged 8-12 in District Bulandshahr, Uttar Pradesh, India, after obtaining an ethical clearance and necessary approval from all school authorities. A total of four schools were selected on the basis forming cluster of schools and them selecting four schools at random using lottery method. Two government schools and two primary schools were selected as for convenience of examiners (convenience sampling). Students available on the day of the examinations were included in the study and those absent or unwilling to participate were excluded from the study. Children present on the day of examinations, with completely erupted first permanent molars and incisors and not suffering from any



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Submitted on: 31-Mar-2022; **Accepted on:** 14-Jul-2022

systemic conditions were included in the study.

The examinations were conducted by four standardized examiners (intra-examiner agreement: 0.83) as well as four standardized recording assistants. The examinations were conducted under natural light or artificial light incase of examinations in a room with low light. Data was entered into a pre-tested and pre-validated proforma. Data was coded and its access was only limited to the primary investigator. Confidentiality of data was assured to school authorities and only coded data was sent for statistical analysis.

Data on MIH was collected as per the scoring criteria recommended by EAPD (Ghanim et al.2011)⁷ and all hypomineralized lesions measuring more than 1 mm were recorded.

RESULTS

Out of 793 children, 186 were diagnosed with MIH (23.5%) with its prevalence reported to be more in boys (102, 54.8%) in comparison to girls (84, 45.2%) and this gender-based difference was observed to be statistically significant ($p=0.03$) there was an increasing frequency of MIH with increasing age. The highest percentage of MIH affected children were aged 12 years (43,23.2%). The number of children affected by MIH were more in government schools (104, 55.9%) as compared to private schools (82, 44.1%). However, the difference between the groups was statistically significant. Table 1.

Variable	Characteristic	p value
Male	102 (54.8%)	0.094*
Female	84 (45.2%)	
Total	186 (23.5%)	
Age (in years)		0.09
8	31 (16.7%)	
9	35 (18.8%)	
10	38 (20.4%)	
11	39 (20.9%)	
12	43 (23.2%)	
School Type		0.88
Government	104 (55.9%)	
Private	82 (44.1%)	

Table 1. Demographic details of the study population

Upon analysis, differences between the number of

affected maxillary (86) and mandibular teeth (100) affected with MIS was found to be statistically significant as per its location as per arch with teeth in the mandibular showing a statistically significant difference ($p=0.02$) and is depicted in table 2. However, no significant difference when a comparison was made between the right and left sides of the arches for both the molars and incisors as seen in table 3.

Teeth Affected	Arch		p value
	Maxilla	Mandible	
Molars	64 (74.4%)	71 (71%)	0.02*
Incisors	22 (25.6%)	29 (29%)	
Total	86 (46.2%)	100 (53.8%)	

Table 2. Prevalence of affected teeth by MIH according to arch

DISCUSSION

There is limited data on the prevalence of MIH in India and hence this study aimed to add important data to the existing literature. In the present study, the realence of MIH was reported to be 23.5%. This percentage is high as compared to the findings of Yannam SD et al. (9.7%)⁸ and Parikh DR et al. (9.2%).⁹ On the contrary, Rai PM et al. reported a prevalence of 13.2%.¹⁰

Teeth Affected	Right	Left	Total	p value
Molars	72(38.7%)	63(33.8%)	135 (72.5%)	0.54
Incisors	26(13.9%)	25(13.6%)	51(27.5)	0.99
Total	98(52.7%)	78(41.9%)	186(100%)	

Table 3. Prevalence of affected teeth by MIH according to jaw location (right and life

The age range taken in the present study of 8-12 years is recommended by the EAPD. In the present study a statistical difference was observed between females and males ($p=0.03$), which is in disagreement to Rai PM et al.¹⁰ A meta-analysis by Lopez et al. also confirmed that MIH was not not sex-related and females and males presented a non-significant difference as per results.¹¹

In the present study, a significant difference was observed regarding the prevalence of MIH between the maxillary teeth compared to the mandibular teeth ($p=0.02$), which is in disagreement with Yannam SD et al.⁸ and Jalevik et al.¹²

CONCLUSION

As per the results of the present study, periodic screening of school children is recommended to diagnose defects like MIH and provide prompt treatment if necessary.

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Cite this article as:

Sharma P, Siddhu SS, Thapa T. Assessing the Prevalence of Molar-Incisor Hypomineralisation among School Children in a North Indian District. *Int Healthc Res J*. 2022;6(4):OR1-OR3. <https://doi.org/10.26440/IHRJ/0604.07534>

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Source of support: Nil, **Conflict of interest:** None declared