

Drug induced tooth discoloration in pediatric group: a review

Sumaira Aziz, Abid Salahuddin, Anwer Zeb Jan, Humera Aziz, Shehzad Fahad

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Author Information

Dr. Sumaira Aziz

M.Phil. Scholar
Khyber Medical University,
Peshawar, Khyber
Pakhtunkhwa, Pakistan

Dr. Abid Salahuddin

Associate Professor,
Department of Pediatrics,
Rehman Medical Institute,
Peshawar, Khyber
Pakhtunkhwa, Pakistan
(Corresponding Author)
Email:
abid.salahuddin@rmi.edu.pk

Dr. Anwer Zeb Jan

Professor, Department of
Pediatrics, Rehman Medical
Institute, Peshawar, Khyber
Pakhtunkhwa, Pakistan

Dr. Humera Aziz

Senior Medical Officer
Department of Pediatrics,
Rehman Medical Institute,
Peshawar, Khyber
Pakhtunkhwa, Pakistan

Dr. Shehzad Fahad

M.Phil. Scholar
Khyber Medical University,
Peshawar, Khyber
Pakhtunkhwa, Pakistan

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ABSTRACT

Teeth stains and discoloration are regular occurrences that can arise for a variety of causes. What we eat /drink, ageing and tooth trauma are the most common causes of discoloration. Medications can also cause tooth discoloration, either directly or indirectly. It is our job as health professionals to be aware of the therapeutic treatments that have the potential to stain teeth and to enlighten the general public on how to take the required steps while administering the drugs. This article discusses some of the most common drugs that cause tooth discoloration in children.

Keywords: Drugs adverse effects, children tooth discoloration, extrinsic discoloration, intrinsic discoloration.

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INTRODUCTION

Despite the fact that staining or discoloration of teeth is not yet designated as a general health issue, there is a growing inclination towards the use of brightening or lustering treatments. Cosmetic dentistry has been in high demand recently.¹ Drugs, mouthwashes, physical agents, and common ambient contaminants all have the potential to harm human teeth throughout their embryonic stages following their eruption into the oral cavity, both during their development and beyond.² The natural color of a human tooth crown is predominantly white, with minor yellow and red tints reflecting the color of the dentin beneath the translucent enamel.³ There are two types of influences that are responsible for staining teeth: Those caused by extrinsic factors and those caused by intrinsic congenital or systemic diseases.⁴ If there are enamel blemishes, the staining chances may be increased. The way light is dispersed and absorbed at the surface and within the structures of the tooth determines the inherent color of the tooth.⁵ The creation of colored patches within the acquired pellicle on the surface of enamel determines extrinsic stain and color, which can be altered by improper teeth cleaning technique.⁶ Dentists have to face two noteworthy problems regarding tooth discoloration. The first issue is to figure out the exact reason of discoloration and the second issue is which treatment would be suitable for it. The precise diagnosis of the source of discoloration is

critical because it invariably affects treatment outcomes.⁷

DRUG-INDUCED EXTRINSIC TOOTH DISCOLORATION

Extrinsic stains are a sort of discoloration that affects the enamel, which is the outermost covering of a tooth. Coffee, tea, cola, and cigarette products are common causes of extrinsic stains. Extrinsic stains, while not as permanent as intrinsic stains, are resistant to constant brushing.

Mouth Rinses

One of the first things to consider when using mouthwash in children is their age. Children under the age of six should not use mouthwash, according to the American Dental Association (ADA). That implies mouthwash should be avoided by newborns and toddlers under the age of six, as their swallowing reflexes may not have fully matured and the mouthwash could be swallowed. Fluorosis can appear as white streaks on the teeth if a toddler consumes fluoride-containing mouthwash.⁸ Children under the age of eight, according to the American Dental Association, are at risk for getting this problem while their teeth are still maturing. Mouthwashes containing chlorhexidine gluconate (CG) are commonly used to treat gum disease. This assertion is correct: Even in over-the-counter mouthwashes, CG is effective in the treatment of active gum disease. CG, on the other hand, is particularly effective at staining teeth, and simple at-home solutions are unlikely to be enough to avoid this adverse effect.⁸

Antimicrobials

The Netherlands Pharmacovigilance Foundation documented 25 occurrences of tooth discoloration ranging from yellow to brown following oral administration of liquid medications; 84 percent of the cases involved antibiotics, 14 of which were amoxicillin.⁹ After using 100 to 400 mg amoxicillin-clavulanic acid every 8 hours, Garcia-López et al reported three incidences of tooth discoloration in kids aged 3 to 6.¹⁰

Linezolid

In an 11-year-old immune-suppressed girl having cellulitis, Matson and Miller documented extrinsic darkening of mandibular front teeth following 28

days of linezolid therapy.¹¹ A 7-day course of intravenous vancomycin was administered together with oral linezolid (30 mg/kg/d) for 3 weeks to an 8-year-old girl with bacteremia and polyarthritis, and after 1 week of linezolid therapy, she acquired brownish staining of her teeth.¹²

Ciprofloxacin

Some of the teeth of 13 premature neonates treated with 10 to 40 mg/kg/d ciprofloxacin in two separate doses, produced a greenish staining that could not be removed mechanically.¹³ As a result, the experts recommend that ciprofloxacin should be avoided in newborns.

DRUG-INDUCED INTRINSIC TOOTH DISCOLORATION

When a medication interferes with odontogenesis, it causes intrinsic tooth discoloration, which is permanent. Intrinsic discoloration is caused by alteration in the composition or width of the tooth hard tissues. The usual hue of teeth is enabled by the blue, green, and pink tints of the enamel, which are reinforced by the yellow to brown tones of the dentine beneath.

Tetracycline

The buildup of a colored tetracycline-calcium orthophosphate combination in the growing tooth causes tetracycline-induced tooth discoloration.² As a result, tetracycline's operation has traditionally been restricted during pregnancy and before the age of eight.¹⁴ Although not all tetracyclines stain the teeth in the oral cavity; in fact, doxycycline causes essentially minimal tooth discoloration or enamel hypoplasia in young infants.¹⁵ As a result, the American Academy of Pediatrics updated its recommendation that doxycycline could be used for a short duration (21 days) therapy regardless of age.¹⁶

Tigecycline

Tigecycline is a broad-spectrum antibiotic that can be employed to a wide range of drug-resistant bacteria.¹⁷ It is not suggested for

children under the age of eight because it is a tetracycline derivative with the possibility for tooth discoloration.¹⁸ Nevertheless, tigecycline usage is continued in salvage therapy for harmful infections in infants and youngsters when the possible advantages outweigh the unknown harm on tooth development.¹⁹ Tigecycline is not suggested for usage during tooth development, despite the lack of published data on the risk of tooth discoloration. Because tigecycline has the ability to treat infections caused by multidrug-resistant bacteria, it is especially useful for treating severe infections in children.²⁰

Fluorides

Fluorosis is a tooth-related aesthetic disorder. Fluoride poisoning throughout the first eight years of life is the reason. Most permanent teeth are developed during this period.²¹ Despite the fact that fluorosis is not a sickness, its psychological impacts can be distressing and difficult to manage. The misuse of fluoridated dental products such as toothpaste and mouth rinses is a primary cause of fluorosis.²² Children sometimes swallow fluoridated toothpaste rather than spitting it out because they like the taste. Fluorosis can also be caused by other factors. Taking hold of a higher-than-recommended dose of a fluoride supplement during early years of life, can lead to it. Consuming a fluoride supplement can be counterproductive if drinking water containing suitable amount of fluoride or fluoride-fortified soft beverages already supply adequate fluoride levels.²³

CONCLUSION

To prevent tooth discoloration, additional evidence is clearly needed on medicines, particularly those that should be avoided during pregnancy and children. Practitioners must make sure that medications prescribed to pregnant women and children do not have any negative effects on teeth. In addition, more effective strategies for educating doctors and families about the detrimental consequences of medicines on oral hygiene are urgently needed.

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