Sparfloxacin is a synthetic, second generation, broad spectrum aminodifluoroquinolone antibiotic, which, because of its excellent penetration into respiratory tissues (pulmonary parenchyma, bronchial wall, and bronchial mucosa) and good activity against Gram-positive, Gram-negative, and atypical bacteria, is indicated for the treatment of adult community-acquired pneumonia and acute exacerbation of chronic bronchitis. Although it is indicated for the treatment of adult community-acquired pneumonia and acute exacerbation of chronic bronchitis, its use has been limited by phototoxicity which is more common with it than with other quinolones. We report a case of a 20-year-old Nigerian woman who developed a diffuse blue-black nail pigmentation of thumb and big toe nails, 2 weeks after completing therapy with sparfloxacin, and a recurrence of the pigmentation in the same nails 1 year after taking the drug again. We think this is likely a case of subungual fixed drug eruption. We briefly discuss the causes and mechanisms of drug-induced nail pigmentation in general.

Keywords: Drug-induced nail pigmentation, fixed drug eruption, sparfloxacin

Abstract

Sparfloxacin, a synthetic, second generation, broad spectrum aminodifluoroquinolone antibiotic, has excellent penetration into respiratory tissues and has good activity against Gram-positive, Gram-negative, and atypical bacteria. Although it is indicated for the treatment of adult community-acquired pneumonia and acute exacerbation of chronic bronchitis, its use has been limited by phototoxicity which is more common with it than with other quinolones. We report a case of a 20-year-old Nigerian woman who developed a diffuse blue-black nail pigmentation of thumb and big toe nails, 2 weeks after completing therapy with sparfloxacin, and a recurrence of the pigmentation in the same nails 1 year after taking the drug again. We think this is likely a case of subungual fixed drug eruption. We briefly discuss the causes and mechanisms of drug-induced nail pigmentation in general.

Keywords: Drug-induced nail pigmentation, fixed drug eruption, sparfloxacin

Sparfloxacin-induced Nail Pigmentation: A Case of Fixed Drug Eruption?

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Résumé

La sparfloxicine, un antibiotique aminodifluoroquinolone synthétique, de deuxième génération, a une excellente pénétration dans les tissus respiratoires et une bonne activité contre les bactéries Gram-positives, Gram-négatives et atypiques. Bien qu’il soit indiqué pour le traitement de la pneumonie chez l’adulte acquise dans la communauté et une exacerbation aiguë de la bronchite chronique, son utilisation a été limitée par la phototoxicité qui est plus fréquente avec celle des autres quinolones. Nous rapportons un cas d’une femme nigérienne de 20 ans qui a développé une pigmentation diffuse des ongles bleu-noir des ongles du pouce et du gros orteil, 2 semaines après avoir terminé le traitement par sparfloxacine et une récidive de la pigmentation dans les mêmes ongles 1 an après Reprendre le médicament. Nous pensons que c’est probablement un cas d’éruption de drogue secondaire subungue. Nous discutons brièvement les causes et les mécanismes de la pigmentation des ongles induite par les médicaments en général.

Mots-clés: Pigmentation des ongles induite par un médicament, éruption fixe des médicaments, sparfloxacine

Introduction

Sparfloxacin is a synthetic, second generation, broad spectrum aminodifluoroquinolone antibiotic, which, because of its excellent penetration into respiratory tissues (pulmonary parenchyma, bronchial wall, and bronchial mucosa) and good activity against Gram-positive, Gram-negative, and atypical bacteria, is indicated for the treatment of adult community-acquired pneumonia and acute bacterial exacerbation of chronic bronchitis. Its widespread use is, however, limited by phototoxicity which is common and more likely to occur than with other quinolones. Nail pigmentation has rarely been reported with quinolones. We report a case of blue-black pigmentation of nails induced by sparfloxacin, discuss the likely mechanism, and briefly discuss the causes and general mechanisms of drug-induced nail pigmentation.
**Case Report**

A 20-year-old woman presented with a month history of an asymptomatic darkening of her thumb and big toe nails. She had received a 7 days course of sparfloxacin 200 mg daily for acute bronchitis, and nail changes were noticed 2 weeks after completion of drug therapy. She was otherwise well and had not received any other medication. She was not HIV positive. Examination revealed diffuse blue-black discoloration of the thumbnails with sparing of the proximal and lateral edges [Figure 1]. The big toe nails were similarly but less severely affected. The other nails were normal. The skin, mucous membranes, and sclerae were normal. Follow-up 3 months later showed gradual clearing of the pigmentation. A year later, she presented again with a similar blue-black pigmentation of the proximal nails of the thumbs [Figure 2] and big toes within a week of completing treatment with sparfloxacin prescribed for upper respiratory tract infection. The pigmentation in the nails cleared gradually over 6 months.

**Discussion**

Drug-induced nail abnormalities, including pigmentation, are well known adverse effects of drugs and this subject has recently been reviewed by Piraccini et al.[3] Nail pigmentation may result from induction of melanin production by nail matrix melanocytes or from excretion and deposition of the drug in the nail plate. Nail pigmentation may also result from dermal deposition of the drug in the subungual area. Activation of matrix melanocytes (diffusely or in clusters) is the most common cause of nail pigmentation and is commonly associated with cancer chemotherapeutic agents such as cyclophosphamide, doxorubicin, fluorouracil, and hydroxyurea.[4] Combination of these drugs is more likely to lead to pigmentation than when used alone. Other causes include tetracyclines, sulfonamides, psoralens, zidovudine, ketoconazole, levodopa, phenytoin, and carbamazepine.[3] Pigmentation is usually diffuse but may consist of one or more longitudinal or, rarely, transverse bands and may occur alone or be associated with other nail abnormalities such as brittleness, ridging, and onycholysis. The pigmentation clears as the nail grows distally. Melanocyte activation is more common in dark skin races.[3]

Deposition of drug or other pigment within the nail plate is rarer and has been reported with tetracyclines (yellow discoloration which fluoresces under Wood’s light), clofazimine (dark brown nails), and gold salts (yellow discoloration). Deposition of a drug, hemosiderin, or melanin in the subungual area may lead to nail pigmentation and has been reported with minocycline (blue-gray pigmentation) and other tetracyclines, antimalarials (amodiaquine, chloroquine, mepacrine), and arsenic. Subungual pigmentation induced by these types of drugs is associated with pigmentation of the skin and mucous membranes, and the nail discoloration does not move distally with nail growth although its intensity may lessen after withdrawal of the drug. Matrix melanoma is a very important differential diagnosis of drug-induced longitudinal melanonychia;[3] dermoscopy is now recognized as an excellent tool for the evaluation and subsequent management of nail pigmentation.[6]

Drug-induced nail pigmentation has rarely been reported with quinolones; we could find only the case series of three patients with diffuse nail pigmentation induced by sparfloxacin reported by Guptha and Sacchidanand which occurred in Indian patients treated for skin infection and acne vulgaris.[7] All occurred within 2–3 weeks after commencing the drug at a daily dose of 200 mg and all resolved on follow-up as in our case. The temporal association with the use of sparfloxacin in our patient, absence of other explanation, resolution of the pigmentation, and recurrence of the condition suggested that sparfloxacin was the cause of the drug-induced pigmentation. Although diffuse activation of nail matrix melanocytes and subsequent melanin deposition in the nail plate is common in patients with dark skin, this is an unlikely mechanism in our case because it would have involved all the nails when the patient first presented. The involvement of the thumb and big toenails initially and on reexposure to the drug a year later suggests that this is likely a case of subungual fixed drug eruption (FDE) affecting nails. It is well known that FDEs affect previous sites of involvement although new areas may be

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**Figure 1:** Clinical photograph of sparfloxacin-induced nail pigmentation of thumbnails

**Figure 2:** Clinical photograph of recurrence of nail pigmentation of thumbnails in the same patient as in Figure 1 one year after the initial episode
also be affected on subsequent exposure to the offending agent.\[9\]
The timeframe of the development of the nail pigmentation in the first and subsequent episode is also consistent with FDE. FDE involving nails is extremely rare. We could only find the report of Benton and McGibbon\[9\] in the English language literature in which a case of subungual FDE induced by co-amoxicillin was reported and which initially affected the index finger of the right hand and, on subsequent occasion, also involved the little finger. Although rare, clinicians need to be aware of this adverse effect and provide the necessary reassurance as this pigmentation, although asymptomatic and self-limiting, can be very distressing for the patient.

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**Conflicts of interest**
There are no conflicts of interest.

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