



## Photo-onycholysis associated with the use of doxycycline

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*BMJ* 2004;329:265  
doi:10.1136/bmj.329.7460.265

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## DRUG POINTS

## Photo-onycholysis associated with the use of doxycycline

Anneke Passier, Astri Smits-van Herwaarden, Eugène van Puijenbroek

The Netherlands Pharmacovigilance Centre Lareb received five reports concerning photo-onycholysis associated with the use of doxycycline (table). All five patients used 200 mg of doxycycline a day for the prophylactic treatment of Lyme disease after tick bite. In all cases the affected nails had been exposed to the sun during the summer. All patients showed (partial) recovery after several months. To our knowledge, no other factors (either specific physical disorders or concomitant drug use) were responsible for the onycholysis in these patients.

Although the association between doxycycline and onycholysis has been sparsely reported,<sup>1-3</sup> the circumstances of the patients we report differ from those described elsewhere. All five patients used doxycycline exclusively for the prophylactic treatment of Lyme disease; we did not find any studies that suggested a possible connection between Lyme disease and onycholysis.

The mechanism of this phototoxic reaction is not fully understood. The nail bed is relatively unprotected from sunlight and contains less melanin (implicating less ultraviolet protection) than other skin sites. Onycholysis may, therefore, be the sole expression of a photosensitivity reaction.<sup>4</sup> Photosensitisation to doxycycline may be mediated by excited state oxygen singlets and free radicals, which arise because of irradiation with ultraviolet A. This may cause selective

injury to mitochondria, the preferential intracellular site of localisation of doxycycline.<sup>5</sup>

*Borrelia burgdorferi*—which causes Lyme disease—is becoming a more common coinfecting pathogen, and doctors are developing an increased knowledge and awareness concerning the potential risks of tick bites. Due to these developments, more high dosages of doxycycline may be prescribed more often. Considering the relatively good health of the patients using doxycycline for the given indication, exposure to sunlight is the likely cause of onycholysis. These patients should avoid exposure of their nails to the sun shortly after using doxycycline.

Funding: None.

Competing interests: None declared.

- 1 Yong CK, Prendiville J, Peacock DL, Wong LT, Davidson AG. An unusual presentation of doxycycline-induced photosensitivity. *Pediatrics* 2000;106:E13.
- 2 Cavens TR. Onycholysis of the thumbs probably due to a phototoxic reaction from doxycycline. *Cutis* 1981;27:53-4.
- 3 Frank SB, Cohen HJ, Minkin W. Photo-onycholysis due to tetracycline hydrochloride and doxycycline. *Arch Dermatol* 1971;103:520-1.
- 4 Bruinsma W. Nail changes due to drugs. In: Bruinsma W, ed. *A guide to drug eruptions*. 7th ed. Amsterdam: Intermed, 2000:26.
- 5 Shea CR, Olack GA, Morrison H, Chen N, Hasan T. Phototoxicity of lumodoxycycline. *J Invest Pharmacol* 1993;101:329-33.

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*BMJ* 2004;329:265

## Reports of photo-onycholysis associated with the use of doxycycline\*

Patient	Sex	Age (years)	Duration of treatment (weeks)	Sun exposure	Concomitant medication	Reported adverse drug reactions	Time to onset of onycholysis (days)	Outcome
1	M	12	2	Sunbathing (August), feet were protected	None	Photosensitivity reaction Skin discolouration Onycholysis (all fingernails affected)	35	Partly recovered after 1 month
2	F	38	4	Sunbathing (holiday in France in June), foot protection unknown	Citalopram, 20 mg once a day	Onycholysis (3 fingernails affected)	3	Partly recovered after 2 months
3	F	38	2	Sunbathing (sunny weather on holiday in August), toes unprotected	None	Onycholysis (all fingernails and 4 toenails affected)	14	Fully recovered after 5 months
4	F	8	1	Sun exposure (August), foot protection unknown	None	Onycholysis (all fingernails affected)	25	Partly recovered after 3 weeks
5	F	58	2	Sun exposure (holiday on a sailing boat in July), feet were protected	None	Abdominal discomfort Photosensitivity reaction Onycholysis (all fingernails affected)	21	Partly recovered after 3 months

\*All patients used 200 mg a day of doxycycline for the prophylaxis of Lyme disease after probable tick bite (erythema migrans was seen in patients 3 to 5).

## One hundred years ago

## Coin debaser and quack doctor

At the trial of Ralph Appleton and another at the Central Criminal Court last week for feloniously "sweating" gold current coins an interesting and somewhat instructive piece of evidence was given by Detective-Sergeant Beard, one of the officers engaged in the case. In cross-examination by Appleton, the detective said that when he searched the premises in Tyers Street (the place in which the felonious occupation was carried on) a quantity of drugs and documents referring to purchase of drugs were found. "He had heard that Appleton was at one time with a quack doctor and that after leaving him he posed as a M.D. of the United States." Appleton informed the Court that he had "made a study of the cause and cure of cancer and that he had at his residence at Brixton 200 medical books." We commend these statements to the Cancer Research Association and also to the

public. The connexion between a cancer quack and a debaser of current coin is somewhat mystical at first sight, but really in both cases there is a "lightening of gold"—in the one case, however, the patient is fraudulently deprived of his coin in its entirety; in the other only a small portion of the gold is "sweated" from the coin itself. How many persons were treated by Appleton, if any, unfortunately, did not come out in evidence and the result of "his study of the cause and cure of cancer" must remain unknown for at least fourteen years, the period of the penal sentence inflicted upon him. Would that more pretenders to a secret knowledge of cancer cures could follow him in his well-earned retirement from unqualified practice! As long as the Medical Act remains unamended there will be many "Appletons" outside the prison walls. (BMJ 1904;i:1033)