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CASE REPORT

Pseudoporphyria due to Naproxen

A cluster of 3 cases

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Pseudoporphyria is a photo-induced blistering disorder with increased skin fragility, caused among others by nonsteroidal antiinflammatory drugs. Lesions heal with scarring and milia. Porphyrin screen studies are normal in this disease. Histology and immunofluorescence resembles porphyria cutanea tarda. In this report we describe a cluster of three cases of naproxen-induced pseudoporphyria, and review briefly previously reported cases induced by naproxen. The majority of reported cases involve children. Physicians should be aware of this reversible skin disorder.

Key words: side effects, nonsteroidal antiinflammatory drugs, naproxen, pseudoporphyria

Pseudoporphyria is a blistering disorder with increased skin fragility. It resembles porphyria cutanea tarda (PCT) in its' reaction to the intake of certain drugs and sunlight exposure, but without disorders in the porphyrin metabolism. Only sunlight exposed areas of the skin are involved; face, dorsal surfaces of hands and feet and less often the neck except the area underneath the chin and behind the ears. Usually blisters heal with scarring and milia. Blisters are subepidermal and histology is identical to abnormalities found in PCT. PCT patients lack uroporphyrinogen decarboxylase, an enzyme of the heme biosynthesis, by contrast in pseudoporphyria porphyrin screen in erythrocytes, urine and feces is normal. Pseudoporphyria due to naproxen was believed to be a rare adverse reaction to the drug, although by now a hundred cases have been reported.

We report here three cases of pseudoporphyria due to naproxen and review briefly the literature, the establishment of diagnosis and hypothetical mechanisms.

Cases

Case 1

During holidays at the Canary Islands a 42-year-old white woman experienced blistering and skin fragility of the dorsa of both hands, fingers and feet for 8 weeks. Her medical history included a moderately active ankylosing spondylitis and in the past a pityriasis rosea. She had been taking an oral contraceptive for several years and naproxen 500 mg b.i.d. for 8 months. Earlier

she had used other NSAIDs. There was no history of hepatitis, porphyria or other photosensitivity disorders. Examination of the skin revealed small blisters with slight scarring from old lesions. No hyperpigmentation, hirsutism, milia or atrophic scarring were present. Laboratory examination, repeated twice, revealed normal liverfunction tests and a normal porphyrin screen in erythrocytes, urine and feces was demonstrated twice. Perilesional skin biopsies showed subepidermal bullae formation. Direct immunofluorescence of the perilesional skin showed aspecific condensation of IgM and C₃ at the edge of the bulla. IgG, fibrinogen, IgA and C_{1q} were diffusely deposited in the dermal layer. No signs of bullous pemphigoid were present. Naproxen was discontinued, but new lesions occurred for another 8 weeks, thereafter blistering ceased with minimal scarring.

Case 2

A 58-year-old white man, who had used sunbeds regularly for several years, had a 6-week history of blistering and skin fragility of the dorsa of both hands. His medical history comprised a longstanding, moderately active, ankylosing spondylitis, for which he took NSAIDs for many years, and prostatism, without hepatitis, porphyria or photosensitivity disorders. The patient reported that he had experienced the same lesions about 5 to 6 years earlier, but to a lesser extent and degree. On both occasions he was using naproxen 500 mg b.i.d. Examination of the skin showed small blisters and some old lesions with slight scarring. No other abnormalities of the skin were seen. Liverfunction tests, porphyrin screen in erythrocytes and urine revealed normal. Skin biopsies were not conclusive be-

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cause of a sampling error. He decided to continue naproxen because of good efficacy, despite advise to stop, and started to use a sunfilter when using sunbeds. Skin lesions healed with scarring within a few weeks. Almost 1.5 years later, no new skin lesions occurred despite naproxen use, but slight skin fragility remained.

Case 3

A 9-year-old white girl with polyarticular systemic-onset juvenile chronic arthritis revealed blistering and skin fragility of the face and dorsa of both hands, aggravated by sunlight exposure. She had no history of hepatitis, porphyria or photosensitivity disorders. She was taking methotrexate 10 mg weekly and naproxen 250 mg b.i.d. (20 mg/kg/day). She had not been treated before with other NSAIDs. Skin examination showed blistering with crustae and scarring of old lesions. Liverfunction tests were normal. A skin biopsy was not felt to be justifiable in view of the age of the patient and the site of the blistering. After naproxen was changed into diclofenac, no new blistering occurred and lesions healed within several weeks.

Discussion

Though other nonsteroidal antiinflammatory drugs (NSAIDs) are known to cause pseudoporphyria as well, the majority of cases published were caused by naproxen (1-9).

A total of 100 cases of pseudoporphyria due to naproxen are known, remarkably 74 of these were children. The mean age of children was 7 years (range 1-18 years) and in adults age ranged from 21 to 84 years. In adults it appeared that mostly women were involved (14 women versus 7 men, 5 not reported), in most cases involving children sex was not reported. Most cases manifested itself during summer, not always clearly related to sunlight exposure, 3 cases occurred after visiting a solarium. Dose of naproxen in adults was 250 to 1500 mg/day, in children the mean dose was 13 mg/kg/day, and the use of naproxen ranged from a few weeks to several years before onset of pseudoporphyria. Most frequently lesions occurred on the dorsal surfaces of hands and feet, in some cases in the face, in a few cases on the neck and in one case also on both knees. Scarring usually remained after healing but showed a tendency to fade. Porphyrin screening was done in the majority of cases and revealed normal. Histology was reported in 16 cases and in 11 of these 19 biopsies, immunofluorescence was done, all biopsies were conclusive for PCT-like abnormalities. Naproxen was stopped in all patients after which skin lesions healed. In 14 cases the time needed

for healing was described and was on average 5 weeks (range 1 week to 2 months).

All three cases described here manifested itself in the summer of 1992, which was an ordinary Dutch summer, though one case manifested itself at the Canary Islands. Pseudoporphyria due to naproxen was not seen earlier at our clinics. Our two adults took part in a 48-week double-blind study comparing β -cyclodextrin-piroxicam (n=30) with naproxen (n=29) in ankylosing spondylitis. One of our cases (case 2) differs from other cases in the literature as skin lesions healed while naproxen was still being administered, but patient had started to use a sunfilter. One case of pseudoporphyria due to nalidix acid behaved similarly (10). No porphyrin screen was done in case 3, but the causal relation with discontinuation of naproxen and subsiding of characteristic skin lesions confirm the diagnosis.

Although phototoxicity is widely accepted, several hypotheses have been developed. Naproxen is known to stabilize the liposomal membrane in vitro and to be a potent inhibitor of cyclo-oxygenase. In most hypotheses sunlight plays a central role. The inflammation of the sun exposed skin may be due to: a. the chemical structure of NSAIDs itself which may induce photosensitization of the skin (4, 11); b. the release of free oxygen radicals by naproxen which may contribute to the phototoxic reaction (4, 8), probably as well aggravated by complement compounds (7). Other hypotheses suggest that pseudoporphyria patients have minor disturbances of heme-biosynthesis leading to symptoms in case of excessive sunlight exposure (5, 12), perhaps sometimes associated with intake of alcohol (5), estrogens (5) or eventually minor skin trauma (6). The relation with sunlight exposure is confirmed especially in three patients with vitiligo in whom bullae were only present on areas of vitiligo (12-14). Not only exposure to a high intensity of sunlight may induce pseudoporphyria, but also multiple prolonged low-grade exposure may cause skin lesion resulting mostly in decreased adhesion of dermis and epidermis (9, 15).

It is not easy to explain the larger frequency of pseudoporphyria due to naproxen in children (Allen et al. (6) even reported that 6% of all children using naproxen experienced pseudoporphyria), especially as far less children than adults use naproxen. Possibly children experience more frequently trauma of the skin during sunlight exposure and are more exposed.

Pseudoporphyria might be seen as a 'diagnosis per exclusionem'. PCT, epidermolysis bullosa acquisita and hydroa vacciniforme must first be ruled out as a diagnosis. The only difference between PCT and pseudoporphyria is the negative porphyrin screen in the latter.

It may be concluded that the pathogenesis of pseudoporphyria due to naproxen is still not clear, but there seems to be a relation to sunlight exposure and perhaps

minor skin trauma. Discontinuation of naproxen is the best treatment. One should be aware of this adverse drug reaction, especially in fair skinned patients and even more in children.

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