

ALLERGY IN HORSES FROM ARTIFICIALLY FLUORIDATED WATER

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SUMMARY: As described recently in *Fluoride*, horses on artificially fluoridated water (AFW) developed chronic fluoride poisoning. This report describes an allergic manifestation as an addition to the classical signs of fluorosis, viz., urticaria. The skin lesions disappeared promptly when an affected horse was removed from AFW and returned promptly when the horse was returned to AFW. These reversible changes attest to the highly allergenic potential of fluoride.

Keywords: Allergy to fluoride; Artificially fluoridated water; Chronic fluorosis; Fluoride allergy in horses; Horses and fluoride; Urticaria from fluoride.

INTRODUCTION

Recently in this journal we reported fluoride poisoning in horses from drinking artificially fluoridated water (AFW).¹ The horses exhibited classical signs of chronic fluorosis, viz., colic, dental fluorosis, decreased serum thyroxin, osteomegaly as hyperostosis and endostosis, hoof deformities, and fluoride retention in bone tissue. Here we add allergy as another expression of fluorosis in horses. Allergy or hypersensitivity to fluoride is well documented in humans,² and it has been reported in laboratory studies on rabbits and guinea pigs³ and confirmed in guinea pigs.⁴ However, experimental studies in cattle and sheep,⁵ and in cattle,^{6,7} as well as reports of fluorosis under field conditions in dairy cows and cattle,^{8,9} do not mention allergy as a result of exposure to fluoride, nor does *Effects of Fluorides in Animals*, an official US Government publication.¹⁰

MATERIALS AND METHODS

The senior author CJ owns and operates a Quarter horse farm in Pagosa Springs, CO, USA. Artificially fluoridated water (AFW) was introduced into the community in the 1980s and was the only source of water for the horses. It was also essentially the only source of fluoride, since the horses were not fed a fluoride-containing calcium-phosphorus mineral mix, nor was their roughage contaminated by fluoride-containing fertilizer. Altogether, over the years eleven horses were exposed to the AFW. Allergy to the water was noted in two of the horses in the form of skin lesions, documented with photographs, which form the basis of this report.

PRESENT FINDINGS

Case 1 of skin allergy occurred in a female Quarter horse. Born and raised in New Mexico, this filly was brought to the farm at age 7 months. After two months on AFW she developed urticaria over much of her body. (Urticaria in humans: “A vascular reaction of the skin marked by the transient appearance of smooth, slightly elevated patches, which are redder or paler than the surrounding skin and often attended by severe itching. The eruption rarely lasts longer than two days, but may exist in chronic form.”¹¹). The lesions observed here were annular and

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well demarcated from the surrounding area with diameters ranging from 1.2 to 10 cm. At the center they were raised up to 1.5 cm. The lesions did not appear to cause pain or itching, nor did they show any oozing. They appeared quickly, and after a few days they started to crater centrifugally to leave well demarcated rings as shown in Figure 1. These fingerprints of urticaria persisted for as long as the horse drank the AFW. As seen in Figure 2, the lesions extended over most parts of the body.

The recession of the skin lesions was not uniform. As they receded, the lesions became small nodules (Figure 1) or irregular remnants on the periphery (Figure 2).



Figure 1. This Quarter horse filly was photographed at age 1 year and 2 months, when she had been on artificially fluoridated water for 7 months. Under and below the horizontal part of the halter are well demarcated, annular remnants of allergic lesions. Receding allergic reactions are present on the neck as small nodules. The once annular remnant of the lesion below the eye is now only an irregular strand, which are so abundantly present in Figure 2.

Not long after being acquired in the late fall of 2002, the filly soon experienced one of Colorado's most renowned commodities—snow. Apparently guided by natural instincts, she began replacing AFW with snow and was somewhat successful in reducing her skin lesions. More impressive results occurred when she was taken to shows in places without AFW. There the urticaria *disappeared within 12 to 15 hours*. Upon her return to AFW on the farm, the urticaria

reappeared within 12 to 15 hours. This sequence recurred each time the filly was brought to a show and then back home. In mid-March 2004 she was taken completely off AFW and given only trucked-in nonfluoridated river water. From then on the skin lesions ceased and did not reappear.



Figure 2. This figure shows the extent of the allergic reactions with the irregular strands shown in Figure 1.

Case 2 of skin allergy was a male Quarter horse born in 1998 to a mare that had been on the farm for many years and thus had been exposed to fluoride *in utero*. At birth, ten days beyond the normal gestation period, the newborn colt was very skinny and small as shown in Figure 3. He was cryptorchid and was gelded. At a very young age, he developed numerous skin lesions over his body. They ranged from the size of marbles to golf balls (1.0–2.5 cm in diameter). They were hard in the center and remained hard until he and all the other horses on the farm were switched to nonfluoridated river water in mid-March 2004. They then became softer and smaller, as shown in Figure 4, and most have disappeared as of May 2006. The few remaining are softening and receding. This horse has not developed any urticaria while on nonfluoridated river water nor since the Pagosa Springs water ceased to be fluoridated in March 2005.



Figure 3. This figure shows the small and skinny newborn colt that had been exposed to fluoride *in utero*.



Figure 4. This figure shows receding skin lesions that originally ranged in size from 1.0–2.5 cm.

DISCUSSION

The repeated occurrence of skin lesions when the horses were drinking AFW and their disappearance when the horses were taken off AFW undeniably defines the skin lesions as allergic. At the same time, the sequence of events establishes fluoride as a potent allergen.

Urticaria due to AFW was first reported in 1956 by Waldbott¹² and later verified by him in cases studied with double blind tests.¹³⁻¹⁵ Spittle's comprehensive review² of these reports deserves to be quoted verbatim: "In one case, Mrs PO aged 40 years, the relation of the urticaria to fluoride in water was substantiated by a double-blind test. The patient was required to take a tablespoonful of water daily from three bottles labeled 1, 2 and 3, using each for a week at a time. One bottle contained 1 mg of fluoride per tablespoonful but neither the patient nor her attending physician knew which one it was. The urticaria reappeared on the third day of using the fluoride solution. Another patient, Mrs HP aged 48 years, had generalized urticaria which began three weeks after moving to a fluoridated area. On using water with a low amount of fluoride in hospital (0.1 ppm) the urticaria subsided. Within 24 hours of resuming using fluoridated water the urticaria recurred. An intradermal skin test with a 1:100 dilution of a 1% aqueous solution of sodium fluoride gave a 3-plus wheal reaction. This was followed by a generalized outbreak of urticaria within ten minutes. Control tests with a 1% solution of sodium bromide and sodium iodide were negative. With double-blind testing involving three bottles of water only one of which contained fluoride, urticaria recurred within two days of taking water from the fluoride-containing bottle."

By 1969, an impressive body of well-documented clinical evidence on allergy to fluoride was available.² This information was alarming enough to get the attention of the US Public Health Service, which then requested the officers of the American Academy of Allergy to add the weight of their voices to the promotion. In June, 1971, the 11-member Executive Board of this body declared unequivocally and unanimously: "There is no evidence of allergy or intolerance to fluoride as used in the fluoridation of communal water supplies."¹⁶

The claim that fluoride is not an allergen was reiterated in the early 1990s in four reviews, two from the USA,^{17,18} one from Australia,¹⁹ and one from New Zealand.²⁰ In his review of these claims in the light of available data, Spittle² concluded that these reviews were "seriously incomplete in their coverage of the literature."

As is well known, all relevant US Government Departments favor artificial water fluoridation. Millions of tax dollars are expended each year for its promotion. Proven risks, which have caused most countries in the world to discontinue and/or ban artificial water fluoridation, are ignored or minimized.

To date there has been no retraction by public health officials of statements still favoring artificial water fluoridation with the misinformation that fluoride is not an allergen. Recently, however, the US National Research Council issued a comprehensive scientific review of standards for fluoride in drinking water in which "possible hypersensitivity" to 1-ppm fluoride in drinking water was

acknowledged.²¹ Clearly, the experience of the Justus horses shows that AFW can produce more than a “possible hypersensitivity.”

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