Dermatologic Manifestations of Musicians: A Case Report and Review of Skin Conditions in Musicians

Kathleen Vine, MD; Vincent DeLeo, MD

Chronic practice and performance with a musical instrument predisposes musicians to several unique and characteristic dermatoses, reflecting the hours of dedication to practice to advance their artistic skill. This article briefly discusses a case of a professional musician with a unique allergic contact dermatitis to nickel sulfate and possibly palladium and cobalt chloride in his tuba. We also review several dermatologic causes and manifestations of musical instrument–related dermatitides.

Cutis. 2011;87:117-121.

Musicians, both amateur and professional, are a unique subpopulation of dermatology patients, as their skin and mucosal surfaces are exposed to mechanical forces and chemical substances characteristic to the instrument of their specialty. Often these skin findings are manifestations of countless hours of dedication to both practice and performance with their musical instrument. Several dermatologic findings with names identifying the culprit instrument coupled with the characteristic distribution of skin lesions have been coined, including fiddler's neck, flautist's chin, guitarist's nipple, and harpist's finger. The underlying process triggering the skin manifestations may be related to localized pressure, friction-induced mechanical shearing forces, allergic or irritant contact dermatitis, infections (bacterial or viral), psychological factors (anxiety), or excessive saliva or sweat production. This article briefly discusses a case of a professional musician with a unique allergic contact dermatitis to nickel sulfate and possibly palladium and cobalt chloride in his tuba. We also review several dermatologic manifestations of musical instrument–related dermatitides.

Case Report

A 23-year-old man with a medical history of asthma as a child presented with an itchy rash on his bilateral arms and chest of 6 months' duration (Figure). He was in good general health, was not taking any medications, and had no known medication allergies. The patient was a full-time music student who specialized in playing the tuba. His daily routine included several hours of practice with his tuba to perfect his art. On physical examination, the patient exhibited well-demarcated, erythematous, scaling plaques on his bilateral forearms, bilateral upper arms, and chest.

To rule out allergic contact dermatitis, the patient underwent patch testing using the standard North American Contact Dermatitis Group contact allergens as well as allergens from a supplemental tray containing several metals (ie, titanium, molybdenum, chromate, gold, silver, platinum, tin, copper). It was believed that the patient was likely allergic to one of the metals he was exposed to in his tuba. The patch tests results revealed that the patient had a positive reaction to nickel sulfate, palladium, and cobalt chloride. The tuba was made of brass, which does not contain any of these metals. The possibility of the patient having an allergic contact dermatitis to one or several of the metal connectors and posts on the tuba, which were not brass, was then suspected. On further investigation, a dimethylglyoxime test revealed that several of the nonbrass metal connectors and posts on the tuba did in fact contain nickel. The patient was given a diagnosis of allergic contact dermatitis to nickel

From the Department of Dermatology, St. Luke's-Roosevelt Hospital Center, New York, New York.
The authors report no conflict of interest.
Correspondence: Kathleen Vine, MD, 1090 Amsterdam Ave, Ste 11B, New York, NY 10025 (khardick@hotmail.com).

A 23-year-old man with well-demarcated, erythematous, scaling plaques on his bilateral forearm and bilateral upper arm, corresponding to areas of contact with his tuba.

sulfate and possibly palladium and cobalt chloride that he was exposed to in the nonbrass parts and connections of his tuba. He was instructed to wear protective clothing on his arms while practicing and performing to minimize his exposure to nickel. The patient was relieved to discover the etiology of his skin lesions. Following use of a mild topical corticosteroid and protective clothing, his skin lesions greatly improved. The patient is considering the purchase of a new tuba made of silver.

Comment

Long-term practice and performance with a musical instrument predisposes musicians to several unique and characteristic dermatoses reflecting the hours of dedication to practice to advance their artistic skill. The mechanisms contributing to the resulting dermatologic condition(s) include one or a combination of the following causes: trauma, allergic contact dermatitis, irritant contact dermatitis, infection, and psychological effects (Table 1).

In a self-reported survey of 412 musicians conducted by Gambichler et al,[1] roughly 21% of musicians described an instrument-related skin disorder. Trauma and contact dermatitis were among the main reasons for development of instrument-related dermatoses and findings were significantly associated with both high practice frequency (P=.022) and professional musician status (P=.001).[1]

One of the most common causes of skin conditions in musicians is repetitive physical trauma. According to Adams,[2] "formation of calluses in instrumentalists may provide protection against additional trauma and can thus be considered valid 'occupational marks,' which may denote the occupation of the person." For instance, Garrod pads are calluses often found on the dorsal proximal interphalangeal joints of the index or middle fingers of violinists from long-term skin trauma.[3] Adams[2] also discusses chronic paronychia of pianists and harpists and onycholysis

Table 1.

Mechanisms Contributing to Dermatologic Conditions in Musicians

Trauma (ie, pressure/friction)
Blisters
Calluses
Erosions
Hemorrhage
Onycholysis
Allergic Contact Dermatitis
Exotic woods
Metals
Resins
Stains
Varnishes
Irritant Contact Dermatitis
Acne mechanica
Cheilitis
Fiddler's neck
Infection
Abscess
Bacterial infections
Folliculitis
Herpes labialis
Paronychia
Psychological-Related Skin Disorders (ie, anxiety)
Hyperhidrosis
Hypersalivation
Xerostomia

with subungual hemorrhage that develops secondary to repeated nail trauma from plucking string instruments. Finger callosities of harpists and drummers as well as lip callosities of clarinet, oboe, and horn players also are fairly common among both amateur and professional musicians.[2]

Multiple etiologies (ie, traumatic and allergic contact mechanisms) often overlap and contribute to instrument-associated dermatitis. Cohen[3] addressed both traumatic and allergic causes of skin lesions on the fingertips of musicians of string instruments. He discussed the case of a 6-year-old girl who developed a left index finger blister while learning to play the harp. The blister was attributed to repeated trauma from contact with taut harp strings; however, in addition to trauma-induced lesions, Cohen[3] added that string instrumentalists may develop allergic contact dermatitis to chromium and nickel present in the cello, guitar, harp, sitar, and violin. Electric guitarists are exposed to chromium in the strings, bridge, frets, and chromate leather guitar accessories. Cellists and violinists are exposed to nickel in the handles and clamp components of their instruments.[3] Exposure to these allergic substances in addition to chronic trauma leads to development of a characteristic instrument-related dermatitis.

Musicians also may develop allergic contact dermatitis to nonmetal components of their instruments including paraphenylenediamine, which is found in black-dyed stringed bows and instrument chin rests; propolis (bee glue) used in violin varnish; cane reed found in mouthpieces of saxophones; and rare woods (ie, Brazilian, Indian, and East Indian rosewood, and ebony) used to construct fingerboards and structural components of string instruments.[3] A literature search conducted by Lombardi et al[4] found that the most frequently reported allergic contact sensitizers affecting string and wind instrument players were colophony, exotic woods (Makassar ebony found in violins; Cocobolo and African Blackwood found in the recorder and oboe; Brazilian and Indian rosewood components of chin rests; and ebony found in violins), nickel sulfate, varnishes, and propolis. Colophony is a mixture of resin acids and neutral substances obtained from the Pinaceae family of coniferous trees. It is applied to wax the strings of the bows of violins, violas, and cellos to enhance their tonal quality.[3] Dust from colophony may cause an allergic contact dermatitis on the fingers, hands, face, and neck of string musicians.[1,4] Table 2 provides a list of the most common allergens recommended for patch testing in musicians.[2-4]

Table 2.

Common Allergens Used for Patch Testing in Musicians[2-4]

Chromium
Cobalt
Colophony (rosin)
Exotic woods (Makassar ebony, Cocobolo, African Blackwood, Brazilian and Indian rosewood, ebony wood)
Nickel sulfate
Paraphenylenediamine
Propolis (bee glue)
Wood alcohols

Onder et al[5] investigated skin conditions in a professional Turkish symphony orchestra using a health questionnaire. They found that the most common skin conditions were seen in violin and viola players. Most responders reported fiddler's neck, a localized lichenification of the left side of the neck just below the angle of the jaw. A combination of factors were attributed to development of fiddler's neck, including increased pressure, friction, and occlusion on the skin from the instrument; a poorly fitted chin rest; poor hygiene; and excessive perspiration.[5]

Moreno et al[6] also discussed allergic and irritant contact dermatitis–induced fiddler's neck in 2 female viola players. Each musician exhibited well-demarcated, erythematous, scaling, infiltrated plaques on the left side of the neck. Patch testing revealed a positive allergic contact reaction to nickel sulfate in 1 of the musicians, which was found in the chin rest of the viola. The remaining musician exhibited a negative patch test, and her fiddler's neck was attributed to chronic rubbing, friction, and irritation of the viola against the skin.[6]

Gambichler et al[7] conducted a PubMed search to provide a review of instrument-related skin diseases and found several irritant-induced skin conditions in string, woodwind, and brass instrumentalists, including fiddler's neck, cellist's chest, guitarist's nipple, and flautist's chin. The etiology of the skin lesions was attributed to increased friction, local pressure, shearing stress, local occlusion, and poor hygiene. Acnelike and cyst formation also were found to develop secondary to such localized forces.[7] Table 3

Table 3.

Musical Instrument–Associated Cutaneous Findings[2-4,7]

String Instrumentalists (ie, bassists, cellists, guitarists, harpists, sitarists, violinists, violists)
Cellist's chest: tenderness and inflammation of the xiphoid process; hyperpigmented plaques with inflammatory papules, pustules, cysts, and sinus tracts of the presternum
Cellist's knees: erythema, scaling, callosities, and/or hyperpigmentation of the unilateral or bilateral medial knees
Cellist's scrotum: scrotal irritation secondary to contact with the body of the cello
Fiddler's fingers or Garrod pads: callosities of the dorsal proximal interphalangeal joints of the left index and middle fingers
Fiddler's neck: erythema, edema, inflammation, hyperpigmentation, lichenification, acne mechanica, folliculitis, cyst, and scar formation on the left side of the neck below the angle of the jaw where the instrument comes in contact with the skin
Guitarist's groin: deep vein thrombosis of the left thigh and calf secondary to compression of the guitar body against the medial thigh
Guitarist's nipple: unilateral trauma-induced mastitis secondary to pressure of the sound box against the breast
Harpist's finger: calluses on the sides and tips of the fingers from chronic pressure and friction with harp strings, intracorneal fingertip and subungual hemorrhage, hematoma, and nail dystrophy (ie, onycholysis)
Pizzicato paronychia: infection in the nail fold in string players secondary to pizzicato playing where the musician plucks the instrument strings with the nails and fingertips
Woodwind Instrumentalists (ie, bassoonists, clarinetists, English horn players, flautists, oboists, saxophonists)
Clarinetist's cheilitis: medial lower lip cheilitis associated with contact with cane reed; clarinetist, oboist, and saxophonist upper lip callosity secondary to chronic mechanical forces from the cane reed and/or mouthpiece
Flautist's chin: hyperpigmented and acneform lesions of the central chin from chronic friction and pressure from the instrument
Gothic palate: a highly arched palate associated with elevated palatal volume in woodwind and brass players
Herpes labialis: perioral blisters, erosions, and crusts
Brass Instrumentalists (ie, French horn players, trombonists, trumpeters, tubaists)
Herpes labialis: perioral blisters, erosions, and crusts
Horn player's lip: circumcised atrophy of the medial upper lip
Satchmo syndrome: rupture of the orbicularis oris muscle secondary to mechanical forces from elevated airway pressure while playing a brass instrument
Percussionists (ie, pianists, snare and bass drummers)
Drummer's digits: calluses on bilateral thumbs, index, and third fingers
Piano paronychia: nail fold inflammation and onycholysis secondary to chronic mechanical forces of the nails against piano keys

lists several of the published musical instrument–related skin conditions and their clinical findings.[2-4,7]

Skin infections also have been documented as instrument-related conditions. Herpes labialis has been reported among clarinetists[5] and brass instrumentalists.[2,7] Lip erosions and minor mucosal trauma from prolonged periods of practice and sharing of instruments and mouthpieces may contribute to the development and spread of herpes labialis among musicians.[2] Secondary infections may develop on the body or oral mucosa from irritated or traumatized skin. Bacterial or viral pathogens (ie, hepatitis A, hepatitis B, Epstein-Barr virus, cytomegalovirus) may be transmitted through saliva among musicians sharing instruments or mouthpieces.[7]

Psychological stress related to performance anxiety, fatigue, and competition also can contribute to musician-related dermatoses manifesting as hyperhidrosis (as seen in pianists) or disorders of salivation (as seen in wind instrument players)(hypersalivation or xerostomia).[2,7] Skin conditions found in the general population (eg, atopic dermatitis, acne vulgaris, psoriasis) also can become exacerbated under stressful conditions of practicing or performing with musical instruments.

Treatment and prevention of instrument-related skin conditions are necessary to not only improve amateur or professional musical performance but also to improve quality of life. For trauma-induced dermatoses such as guitarist's nipple, cellist's chest, or Garrod pads, postural and hand grip repositioning techniques can help to reduce friction and other traumatic forces of the instrument against the skin. Use of physical barriers such as tape, foams, pads, small towels, or long-sleeved clothing can help minimize exposure to allergic or irritant contact sources. Patch testing to various metals, woods, resins, dyes, and varnishes should be performed when an allergic contact allergy is suspected. Substituting the allergic contact component of an instrument for a nonallergic component (ie, use of plastic polystyrene reeds for wind instrumentalists allergic to cane reed mouthpieces) can help minimize skin lesions.[7] Good skin and oral hygiene, abstaining from sharing mouthpieces or instruments, regular instrument cleaning and changing of the mouthpiece, and use of topical cleansers or hand sanitizers following practice can help reduce possible infections among musicians. Anxiety-associated hyperhidrosis can be improved with relaxation techniques, psychological counseling, use of beta-blockers, application of topical aluminum chloride, or botulinum toxin type A injections. Disorders of salivation associated with anxiety also can be improved with relaxation techniques, good oral hygiene, and proper hydration prior to performance.

Whether an individual is an amateur or professional musician, a beginner or well-seasoned performer, instrument-associated skin conditions may develop. The potential etiologies of trauma, allergic or irritant contact dermatitis, infection, and psychological-related skin disorders should be investigated and treated promptly, as they not only hinder the musical performance of the artist but also impact the musician's general quality of life.

REFERENCES

1. Gambichler T, Uzun A, Boms S, et al. Skin conditions in instrumental musicians: a self-reported survey. *Contact Dermatitis*. 2008;58:217-222.
2. Adams RM. Skin conditions of musicians. *Cutis*. 2000;65:37-38.
3. Cohen PR. Harpist's finger: case report of a trauma-induced blister in a beginner harpist and review of string instrument-associated skin problems in musicians. *Cutis*. 2008;82:329-334.
4. Lombardi C, Bottello M, Caruso A, et al. Allergy and skin diseases in musicians. *Eur Ann Allergy Clin Immunol*. 2003;35:52-55.
5. Onder M, Aksakal AB, Oztaş MO, et al. Skin problems of musicians. *Int J Dermatol*. 1999;38:192-195.
6. Moreno JC, Gata IM, García-Bravo B, et al. Fiddler's neck. *Am J Contact Dermatol*. 1997;8:39-42.
7. Gambichler T, Boms S, Freitag M. Contact dermatitis and other skin conditions in instrumental musicians. *BMC Dermatol*. 2004;4:3.