

Harpist's Finger: Case Report of a Trauma-Induced Blister in a Beginner Harpist and Review of String Instrument–Associated Skin Problems in Musicians

Philip R. Cohen, MD

GOAL

To understand string instrument–associated skin problems in musicians to better manage patients with these conditions

LEARNING OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Discuss the prevalence of dermatologic conditions in musicians caused by an instrument.
2. Assess allergens causing dermatoses in musicians.
3. Recognize physical trauma caused by musical instruments.

CME Test on page 328.

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Musicians may develop skin problems resulting from playing their instruments. Dermatologic conditions in string players usually are secondary to allergic contact dermatitis (allergens include

chromium, nickel, colophony, paraphenylenediamine, propolis, and exotic woods) and physical trauma (between either the fingers and the strings or the body and the instrument). A beginner harpist who developed harpist's finger—blister and subsequent callus of her left index finger from repeated trauma between the digit and the harp strings—is described, and string instrument–associated skin problems in musicians are reviewed.

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Dr. Cohen is a dermatologist, University of Houston Health Center, Texas, and Clinical Associate Professor of Dermatology, Department of Dermatology, University of Texas Medical School at Houston.

Correspondence: Philip R. Cohen, MD, 805 Anderson St, Bellaire, TX 77401-2806 (mitehead@aol.com).

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Musicians are at risk for developing instrument-associated dermatologic conditions. The cutaneous problems are frequently secondary to abnormalities of saliva production, contact dermatitis, hyperhidrosis, infection, or physical trauma.¹⁻¹⁰ Harpist's finger is reported in a beginner harpist who developed a trauma-induced blister on the finger she repetitively used to play her instrument. Skin problems in musicians caused by string instruments are reviewed.

Case Report

A healthy 6-year-old Chinese girl presented with a blister on her left index finger. She did not have a history of skin fragility or bullous skin disorders. Clinical evaluation revealed an 8×6-mm tense, tender, fluid-filled vesicle on the distal ventral pad of her left index finger.

Additional questioning revealed that she had recently begun playing the harp and was playing the notes by plucking the strings with her fingers (Figure). Her wooden harp (an Allegro) was made of solid Honduras mahogany with a birch-laminated soundboard and finished with a water-white precatalyzed nitrocellulose lacquer with a semigloss (50%) sheen (unicoat). The nylon strings were either

monofilament or wound (nylon wrap over nylon). The red (C musical note) and blue strings (F musical note) were created by placing the nylon strings in boiling water that was used to dissolve scarlet or navy blue dye powder (Rit® dye), respectively.

The diagnosis of a blister secondary to repeated trauma between her distal digit and the taut harp strings was established based on the correlation of the patient's history and clinical findings. The blister subsequently flattened and its roof spontaneously shed. The girl continued to play the harp and eventually developed a callus at this location on her finger.

Comment

Dermatologic conditions in musicians that are caused by the instruments they play are frequently observed in orchestra members. Rimmer and Spielvogel¹ distributed a survey regarding skin problems to 84 members of a professional symphony orchestra; 22 of 24 musicians who replied had instrument-associated dermatologic conditions. Intrigued by this study, Nethercott and Holness² administered a health questionnaire to 41 orchestra members; 8 musicians reported a current work-related skin problem. More recently, Onder et al³ distributed



The harpist's left index finger plucking a blue string (F musical note) on her harp. The neophyte harp student developed harpist's finger, which presented as a tender blister involving the distal ventral pad of the digit.

a questionnaire to 97 orchestra members; 40 of 47 musicians who claimed to have either prior or current skin problems considered their dermatoses to be directly related to instrument use.

Instrument-related skin conditions in musicians have been designated using several different classifications. Some of the conditions are described by their mechanism of pathogenesis and the resulting problem. For example, pizzicato paronychia is an infection of the nail fold in string players resulting from pizzicato playing whereby the musician plucks the instrument's strings instead of using a bow.⁴ Other dermatologic conditions in musicians are designated by combining the name of the instrument with either the anatomic location of the problem (eg, harpist's finger) or the description of the dermatosis (eg, piano paronychia). Alliteration often is incorporated into the nomenclature when these conditions are described, such as cellist's chest, clarinetist's cheilitis, drummer's digits, fiddler's fingers, guitarist's groin, piano paronychia, and pizzicato paronychia.¹⁻⁶

Harpists may develop calluses on the sides and tips of their fingers (harpist's finger), resulting from pressure and friction between the harpist's fingers and the strings of the instrument. The calluses may be painful or become irritated. Similar to the reported beginner harpist, neophyte harpists are especially susceptible to finger injury, such as sore fingertips and blister formation, prior to the development of calluses. Gradually increasing the time devoted to practicing the harp may enable the beginner harpist to avoid these problems.^{1,2,4,6,7,9,11}

Harpists also are at risk for developing other instrument-associated dermatologic conditions, including not only intracorneal hemorrhage of the fingertips, similar to the friction-induced bleeding within the upper epidermis observed on the toes of runners (talon noir), but also nail dystrophies. Loosening of the nail plates and onycholysis may result from repetitive glissando playing in which the harpist rapidly glides one or more fingertips across multiple consecutive strings. In addition, paronychia, such as pizzicato paronychia from plucking the strings, and subungual hemorrhage with hematoma formation are other nail-related problems in harpists.^{1,4,6,7,9,11-13}

Allergic contact dermatitis also has been observed, albeit rarely, in harpists. A 25-year-old woman who was a harpist developed an eczematous eruption of 5 months' duration on the fingertips of her right hand.² Patch testing documented a 2+ reaction to potassium dichromate. Additional investigation revealed that this allergen was used as a tanning agent for the harp strings.²

Instrument-associated skin maladies also have been described in individuals playing other string

instruments (Table).¹⁻²⁰ The main causes for these dermatoses are allergic contact dermatitis and physical trauma. The most common allergens associated with string instruments are chromium, nickel, colophony, paraphenylenediamine, propolis, and exotic woods.^{1-3,5-8,15,16,20}

The 2 metallic substances, chromium and nickel, have been observed as allergens in musicians who play cello, guitar, harp, sitar, and violin. Allergic contact dermatitis to chromium has been described in electric guitarists, caused by contact with chromated steel components of their instruments, such as the strings, bridge, and frets, as well as the chromated leather accessories such as the guitar strap; a harpist for whom the allergen was used as a tanning agent for the harp strings; and a violinist whose E string was gold plated surrounding a chromated steel core.^{2,6,16} Nickel-related contact dermatitis has been described in a cellist whose wooden bow handle contained nickel, guitarists whose guitar strings contained the allergen, sitarists from the nickel mizrab covering the right index finger, and a violinist from the metal clamp of the violin's chin rest.^{1,3,6,8,20}

Colophony (rosin) is a naturally occurring complex mixture of resin acids and neutral substances obtained from different species of coniferous trees (family Pinaceae). The principal sensitizer of colophony is abietic acid and its derivatives. Allergic contact dermatitis to colophony has been observed in cellists, violinists, and viola players who apply rosin to wax the strings on the bows of their instruments.^{1-8,15}

Paraphenylenediamine is not only a skin sensitizer but also a skin irritant. Its principal use is in cosmetics as a black hair dye ingredient. Patch testing with a positive reaction to paraphenylenediamine was observed in an 11-year-old girl who had a cello with a black-string bow. She presented with scaling on her right thumb, index finger, and middle finger. A positive patch test result for paraphenylenediamine also was noted in a violinist who developed cutaneous eruptions located on his neck where it came into contact with the instrument's black chin rest.⁵⁻⁷

Propolis, also known as bee glue, has been reported to cause allergic contact dermatitis not only in musicians, such as cellists and violinists, but also in instrument makers. It can be found in many products of everyday use, such as chewing gum, facial creams, mouthwash preparations, and toothpastes. In addition, propolis is used as an ingredient in violin varnish.^{6,7}

Exotic woods occasionally are used in the construction of the fingerboards of guitars and the body and/or chin rests of violas and violins. In string instruments, allergic contact dermatitis has been

String Instrument–Associated Skin Problems in Musicians¹⁻²⁰

Skin Problem	Description
Cello	
Allergic contact dermatitis	Nickel, colophony, paraphenylenediamine, propolis
Callosities of the fingers	
Cellist's chest	Symptoms and skin lesions ranging from tenderness and inflammation on the xiphoid process to hyperpigmented plaques with inflammatory papules and pustules, cysts, and sinus tracts on the presternum skin that are caused by sternum skin contact with the cello back plate when the musician is leaning across the body of the cello and drawing the bow across the strings
Cellist's knees	Skin lesions (erythema and scaling, calluses, or hyperpigmentation) overlying the medial aspects of one or both knees caused by pressure applied to the cello at that body site
Cellist's scrotum	Irritation of the scrotum from the body of the cello
Finger dermatitis	Irritant and traumatic
Garrod pads	Calluses on the dorsal aspect of the proximal interphalangeal joints of the index and/or middle fingers ^a
Guitar	
Acro-osteolysis	Destructive changes to the distal phalangeal bones with associated nail dystrophy (onycholysis and/or pressure-induced tenderness) caused by mechanical stress on the affected fingers
Allergic contact dermatitis	Chromium, nickel, paraphenylenediamine, exotic woods
Callosities of the fingers	
Finger dermatitis	Irritant and traumatic
Guitarist's groin	Deep vein thrombosis of the left calf and thigh caused by the guitar body compressing the deep long saphenous vein beneath the medial thigh
Guitarist's nipple	Traumatic mastitis of one breast (ipsilateral to handedness) with inflamed cystic swelling at the base of the nipple in young girls learning to play classical guitar on a full-sized guitar; caused by the sound box edge pressing against the nipple
Nail dystrophies	Paronychia, splitting of nail plates
Harp	
Allergic contact dermatitis	Chromium
Finger dermatitis	Irritant and traumatic
Harpist's finger	Callosities (occasionally preceded by soreness and blisters) of the fingertips

Skin Problem	Description
Harp (continued)	
Intracorneal hemorrhage of the fingertips	
Nail dystrophies	Nail plate loosening and onycholysis, paronychia, subungual hemorrhage and hematoma
Sarod^b	
Dermatitis	Lichenification of lateral aspect of right hand fingers, which are in constant contact with stone
Sitar^c	
Allergic contact dermatitis (of right index finger)	Nickel
Transverse depressions and scars (of the fingers)	Caused by the pressure of the strings to the pulp spaces of the fingers
Viola and Violin	
Allergic contact dermatitis	Chromium, ^d nickel, colophony, paraphenylenediamine, propolis, exotic woods
Callosities of the fingers	
Fiddler's neck	Skin lesions ranging from erythema, inflammation, hyperpigmentation, and lichenification to acneform papules and pustules, folliculitis, scaling, cysts, and scar formation, and occasionally focal neck edema, below the angle of the jaw where the instrument rests resulting from pressure, friction, sweating, and occlusion
Finger dermatitis	Irritant and traumatic
Garrod pads	Well-circumscribed firm dermal papules, nodules, or plaques localized to the proximal interphalangeal joints of the index and middle fingers of the left hand ^e
Paget-von Schrötter syndrome	Axillosubclavian vein thrombosis of the left upper arm in a viola player caused by pressure exerted on the instrument, which increased the pinching action of the clavicle and costocoracoid ligament on the junction of the axillary and subclavian veins

^aFisher⁴ refers to this as fiddler's fingers.

^bA sarod is a string instrument played with a small stone that is held in the right hand.²⁰

^cA sitar is a string instrument played with a mizrab (a metallic, usually nickel, conical cover) on the right index finger while the strings are stretched with the fingers of the left hand.²⁰

^dBuckley and Rogers¹⁶ refer to this as fiddler's fingers.

^eBird¹⁴ reported a professional violinist who developed knuckle pads, which also have been referred to as Garrod pads in eponymous honor to the person who first described them in the medical literature in 1893, on the extensor (dorsal) aspects of the skin overlying the proximal interphalangeal joints of the left index and middle fingers. The patient regarded his Garrod pads "as an occupational hazard among violinists since some of his colleagues had also developed them at the same site."

attributed to Brazilian rosewood (*Dalbergia nigra*), Indian rosewood (*Dalbergia species*), East Indian rosewood (*Dalbergia latifolia* Roxb.), and ebony (*Diospyros species*) in chin rests and Makassar ebony in a violin. Because boxwood (*Buxus sempervirens*) does not contain any known allergens, it has been suggested as an alternative chin rest wood for musicians with allergic contact dermatitis to the wooden chin rest of their instrument.^{1,5-8}

Physical trauma in musicians who play string instruments can result from the instrument or its strings. Dermatologic problems can be the sequelae of string instrument-induced physical trauma caused by the interaction of the fingers with the strings, which results in acro-osteolysis; callosities, such as harpist's fingers; Garrod pads; and nail dystrophies. Alternatively, mechanical trauma-associated skin conditions can occur secondary to pressure of the instrument against either the neck, chest, groin, knee, nipple, proximal arm, or scrotum.^{1,3-7,9,11-14,17-20}

Conclusion

Musicians who play string instruments, such as the cello, guitar, harp, sarod, sitar, viola, and violin, can develop skin problems that usually result from either allergic contact dermatitis or physical trauma. The most common allergens are chromium, nickel, colophony, paraphenylenediamine, propolis, and exotic woods. Trauma-associated skin conditions are caused by either the interaction of the musician's fingers with the strings or pressure of the instrument against the musician's body. Harpist's finger is an example of a trauma-induced dermatologic problem, presenting as a callus on the affected finger, which may be preceded by soreness and blister formation that can be observed in beginner harpists.

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