Colophony (rosin) allergy: more than just Christmas trees

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Colophony (rosin) is a sticky resin derived from pine trees and a recognized cause of allergic contact dermatitis (ACD), a type IV hypersensitivity reaction. It is present in many products (Table 1) and is a common culprit of allergic reactions to adhesive products including adherent bandages and ostomy devices. ACD to colophony in pine wood is less common although has been reported from occupational exposures, as well as consumer contact with wooden jewelry, furniture, toilet seats, and sauna furnishings. We present a patient with recurrent contact dermatitis following exposure to various wood products over the course of one year.

Case Description
A 34-year-old otherwise healthy man presented with a one-year history of intermittent dermatitis associated with handling pine wood products. His first episode occurred after building shelves using spruce-pine-fir (SPF) lumber. Symptoms began with immediate burning of the skin followed by a vesicular, weeping dermatitis three days later on the forehead (Figure 1), forearms (Figure 2) and legs. He received oral prednisone from Urgent Care with subsequent resolution. Later, he developed a similar rash on his hands after handling a pine Christmas tree, as well as on his nasal bridge after applying Nerdwax®, a tacky substance used to prevent slippage of eyeglasses. Two weeks prior to presentation to our clinic, he developed a facial and forearm dermatitis after assembling wooden furniture. He denied symptoms from bandages or adhesives or from personal care products. The patient worked as a high school English teacher and had no occupational contact with wood.

Patch testing was performed to the 2019-2020 North American Contact Dermatitis Group screening series, selected allergens on the plant/wood and emulsifier series, and multiple home items including Nerdwax®, pine sawdust, and samples of the pine Christmas tree from the previous season. Final patch test reading on day 5 demonstrated strong or very strong (++ or ++++) reactions to colophony, abietic acid, abitol, pine sawdust, Nerdwax®, and his Christmas tree (Figure 3). He also had doubtful (+/-) reactions to wood tar mix (containing pine) and several fragrances. Propolis (bee glue), white beeswax, yellow beeswax,
uncommon and allergens other than colophony may be causative.\textsuperscript{4,5} Prior case reports of pine wood allergy have primarily been noted among individuals with repeated occupational exposures (e.g., cabinet makers, carpenters, and sawmill workers).\textsuperscript{6–8} Non-occupational allergy to colophony in finished wood products is exceedingly rare but has also been reported, usually in settings of routine or prolonged exposures such as with furniture and wooden jewelry.\textsuperscript{3,9} Clinical symptoms of pine wood allergy include dermatitis of body areas directly contacting pine, in addition to airborne facial patterns if exposure entails wood dust/shavings.\textsuperscript{2,3}

Resulting dermatitis presents up to four days following last exposure consistent with a type IV, delayed type hypersensitivity reaction (allergic contact dermatitis).\textsuperscript{2} Our patient noted facial involvement three days after wiping sweat from his brows while building shelves composed of pine wood.

While the majority of ACD cases to pine wood occur occupationally, most cases of isolated colophony allergy are due to adhesives, plasters, dental materials, hair removal waxing products, and certain cosmetics, especially mascara.\textsuperscript{6,10} Rosin is used as a grip aid for gymnasts, baseball players, bowlers, and rock climb-
ers. It is also used to coat violin bows. As seen in this case, some individuals with colophony allergy also have difficulty with pine trees and pine decorations (i.e., “Christmas tree allergy”). Three main types of colophony exist—gum rosin (the most commonly used), wood rosin, and tall oil, with primary differences based on the method of manufacturing. Main components of colophony include resin acids, largely abietic acid, and a smaller “neutral fraction” consisting of dihydroabietic acid and dehydroabietic acid. Although both unmodified and modified forms of colophony have allergenic potential, modified colophony products, such as abitol, are strong sensitizers. Notably, fragrance and propolis (bee glue) are common cross-reactors to colophony.

Our patient reacted to several fragrances but propolis and beeswax were negative.

This patient's noted patch test reactions, in addition to relevant clinical exposures, aligned well with pine wood and colophony allergies. He was likely sensitized to pine wood, colophony, and their derivatives through previous furniture assembly projects. Future avoidance of colophony-containing products, including pine wood, was recommended, as well as wearing protective clothing when contacting pine wood and avoidance of pine sawdust, which could result in significant airborne exposures. He did not report any prior issues with bandages or adhesives; however, given his strong reaction to colophony, specific alternatives for tapes and wound dressings without colophony and rosin were provided (Table 2). He was also prescribed a three-week oral prednisone taper to resolve remaining dermatitis; if systemic steroids are indicated, it is important to provide a three-week taper (rather than a three- or five-day course) to prevent rebound from partially treated ACD.

We present this case to raise awareness regarding the clinical presentation of colophony allergy from a pine wood source. As a type IV hypersensitivity reaction, ACD typically presents two to three days after the last exposure and lasts for three weeks. Avoidance of products containing colophony, pine, and related derivatives is mainstay therapy.

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References


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