QJM: An International Journal of Medicine, 2019, 531–533

doi: 10.1093/qjmed/hcz095
Advance Access Publication Date: 26 April 2019
Case report

CASE REPORT

Raynaud's phenomenon and the nailfold capillaroscopic findings in a guitar player

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Learning points for clinicians

- Musicians are affected by several well-recognized conditions, among which microvascular abnormalities are the less described and studied, although they can diminish their ability and performance quality. Capillaroscopy is a simple, non-invasive method to diagnose vascular abnormalities in musicians suffering from Raynaud's phenomenon. The capillaroscopic pattern will be the base for the follow-up of the patient, and will indicate the possible need for further investigations aimed at excluding other occulted conditions.
- This case emphasizes the fact that musicians whose hands are exposed to vibrations may suffer from microcirculation damage, for which reason they should be able to access an effective health surveillance program able to detect the first signs of hand–arm vibration syndrome.

Introduction

Guitarists could suffer from various disorders, due to—and influenced by—biomechanical, postural and psychological components, also favored by the frequency of their practice, the ergonomics of the instrument and their playing technique.[1] Although musculoskeletal disturbances are well recognized, microvascular abnormalities are less described and studied.

Case report

We report on a 30-year-old musician examined for cold-induced blanching and pain in his right hand fingers, which started from the middle and ring finger and spread to all the other fingers: the patient is having difficulties in carrying out several tasks, as well as experiencing a little impairment in his playing ability. He does not feel any tingling or numbness, or a reduced sense of touch and/or temperature far-off the attacks. Although vibration is the underlying cause of the condition, it does not induce the attacks, cold exposure being in fact the main trigger for these symptoms: being in a cold environment and a localized or a general body cooling in an otherwise warm environment.

The disorder was unilateral for a period of 3 years, than it started involving the left hand also (Table 1).

The patient has been playing guitar for an average of 3 h a day since he was 10 years old.

His playing technique is a variant of the hybrid pinch widely used on acoustic guitar, consisting in holding the plectrum between thumb and forefinger, using it only if necessary, and pinching the strings with the three remaining fingers. His right hand is not anchored anywhere on the guitar and—interestingly—the patient uses especially the third and fourth finger to pinch the strings. We performed a nailfold video-capillaroscopy (NVC) and we found a 'non-specific pattern' typical of the RP[2] (Figure 1).

Discussion

So far, two cases of Raynaud's phenomenon (RP) have been reported in a slap bass player and in a guitarist,[3,4] and this—as far as we know—is the first NVC study describing and documenting the related microvascular abnormalities. Periungueal capillaroscopy allows in a simple, non-invasive way to evaluate

Received: 9 April 2019; **Revised (in revised form):** 12 April 2019

Table 1. Anamnestic and clinical-laboratory features of the patient

He is right-hander	He is a smoker since he was 17 years old with about 15 cigarettes a day	He was not taking any medications	He has no history of cardiovascular or neurologic disease, diabetes mellitus, thyroid disease, arthritis, or connective tissue disease	He has no history of frostbite or carpal tunnel syndrome	He has no family history of primary RP or connective tissue disease.	The physical examination was unrewarding	He had normal vital signs and no remarkable findings on cardiovascular, neurologic and musculoskeletal examinations	A careful clinical examination and laboratory investigations excluded known pathologies that could lead to nailfold microvascular abnormalities and RP	He did not have symptoms or established diagnosis of connective tissue diseases, neither presented other known causes able to determine NVC abnormalities (no digital ulcers or skin manifestations suggesting a diagnosis of SLE or scleroderma, or suffering from muscle and joint pain)

Figure 1. NVC images in a case of a guitarist suffering of RP showing a 'non-specific pattern': (abnormal NVC pattern without findings suggestive of scleroderma) characterized by lack of morphological homogeneity of capillaries, presence of (**a**) enlarged capillaries, (**b**) ectasia of the efferent tract of the loops, (**c**) tortuous capillaries, (**d**) local hemorrhages and (**e**) neoangiogenesis.

Table 2. How the guitar creates sound and vibration and transmits it to the hands[4]

The acoustic guitar create sound through the vibration of the strings and in general the instrument is tuned by adjusting the string to the frequency of 82–330 Hz.
The resonant frequency of the fingers of the human hand is in the range of 150–300 Hz and incident vibration at frequencies above 100 Hz is better absorbed than lower vibration frequencies by the fingers and hands.
Plucking the string, the consequent vibration may be transmitted to the fingers depressing the string against the fingerboard.
Pinching the strings with the fingers allows the direct transmission of vibrations.

cutaneous microcirculation, and to differentiate between the benign primary RP and the secondary forms, typical of connective diseases. An increased tendency to vasospasm in the digital capillaries represents the vascular component of hand–arm vibration syndrome (HAVS), a secondary form of RP, which is considered a disruption of the digital blood circulation causing an abnormal reaction to cold, called vibration-induced white fingers.[5]

In general, little is known about how the vibration in itself is harmful, and the question becomes more complicated in the case of musicians (Table 2). Furthermore, the intensity of the vibration, the duration and frequency of exposure and several other co-factors should be taken into account.

Currently, NVC appears to be an accurate, reproducible, reliable and objective method to diagnose vascular abnormalities in musicians suffering from RP. The capillaroscopic pattern will be the base for the follow-up of the patient, and will indicate the possible need for further investigations aimed at excluding other occulted conditions, such as connective tissue diseases.[6]

The detection of objective and documented vascular alterations will help the patient achieve a greater awareness of his condition and reassure him, while making him understand the need for a follow-up and, where possible, for a change in some lifestyles and the ways of using the musical instrument. Those musicians whose hands are exposed to vibration may suffer from microcirculation damage, for which reason they should be able to access an effective health surveillance program able to detect the first signs of HAVS.

Taking good care of their hands also contributes to the guitarist's performance.

Conflict of interest: None declared.

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