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Dermatologic Manifestations of COVID-19

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- APMA is approved by the Council on Podiatric Medical Education as a provider of continuing education in podiatric medicine.
- This activity has been approved for a maximum of 0.5 continuing education contact hour.
- To support this webinar, APMA has designated an unrestricted educational grant from Bako Diagnostics.

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Learning Objectives

- To discuss the findings in the literature and how that relates to podiatric medicine.
- To review skin manifestations of viral diseases.

Speaker

Tracey Vlahovic, DPM

- Clinical Professor, Temple University School of Podiatric Medicine, Department of Podiatric Medicine
- Adjunct Professor, Temple University School of Medicine, Department of Microbiology

What I will cover:

Chilblains (Pernio)

Dermatologic manifestations of viral disease

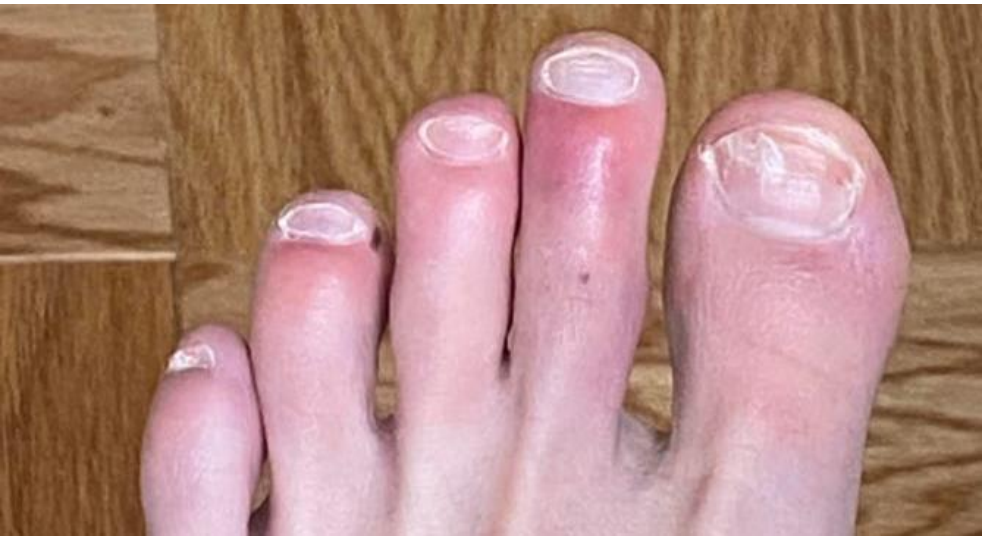
COVID-19 skin manifestations in the literature

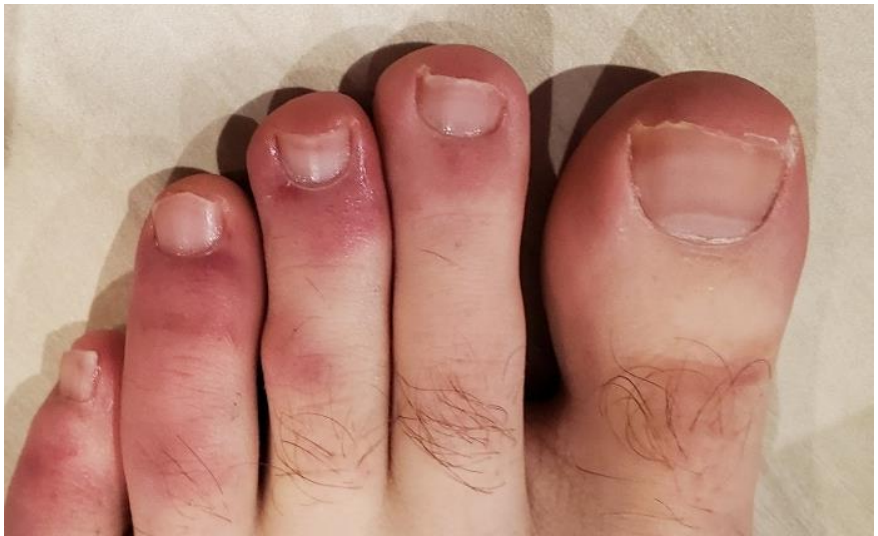
Chilblains

-Inflammation of the acral vessels

-Resolves in 1-3 weeks, or when exposed to warmer temps

-Exact cause unknown, but can be associated with numerous disorders





Working up Chilblains (Pernio)

Common, self-limiting, acral involvement

Study of 104 patients: Women>men, mean age 38, but age range of 6-80, current or former smokers, Raynaud's

Affects the toes 82%

About 25% had no symptoms except the skin change

63% had no abnormal lab tests; cryoglobulins negative

Does not need cold weather; can be from sweating or exposure to water; can be associated with water, but some have pernio without cold or wet conditions

Cappel JA, Wetter DA. Mayo Clin Proc. 2014;89(2):207-215

Working up Chilblains (Pernio)

Need the major and one minor:

One major criterion: localized erythema and swelling involving acral sites and persisting for >24 hrs

Three minor criteria:

1) **onset or worsening in cooler months (Nov to March),**

2) **biopsy results show pernio (in absence of lupus),**

3) **response to conservative care (warming, drying area)**

Cappel JA, Wetter DA. Mayo Clin Proc. 2014;89(2):207-215

Treatment of Chilblains

Differential Diagnoses: vasculitis, lupus, cutaneous thromboemboli

Use criteria, do thorough history

- If no underlying associated systemic condition, no need for skin biopsy and lab studies
- If criteria aren't met, skin biopsy warranted
- If ROS suggestive, do lab work up

Warming, drying, smoking cessation

Topical steroids if pruritic; Systemic therapies (pentoxifylline, aspirin)

Cappel JA, Wetter DA. Mayo Clin Proc. 2014;89(2):207-215

Chilblains in Spain

Landa et al in International J Dermatology

- **Commentary from Spanish dermatologists of chilblain-like lesions with no Raynaud's or ischemia**
- **Reddish papules that became purpuric and flattened**
  - **Mild pain, Resolved on their own**
- **6 cases ranging from 15 y.o. to 91 y.o.**
  - **All but one was symptomatic sytemically**
  - **Only 2 tested positive for COVID-19**

doi: 10.1111/ijd.14937

Chilblains in Spain

No skin biopsies were done

Hypothesis: a "late stage" manifestation of COVID-19

- **due to the amount of cases seen after the peak of infections in Spain, Italy, France**

"The lack of confirmatory testing does not allow us to corroborate the association of these type of lesions with COVID-19"

however, the high number of consultations…

"Until further confirmation that these lesions are related to COVID-19, we must be cautious and recommend general measures of social distance, hygiene, self-isolation, and surveillance"

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doi: 10.1111/ijd.14937

Skin lesions from Landa et al article

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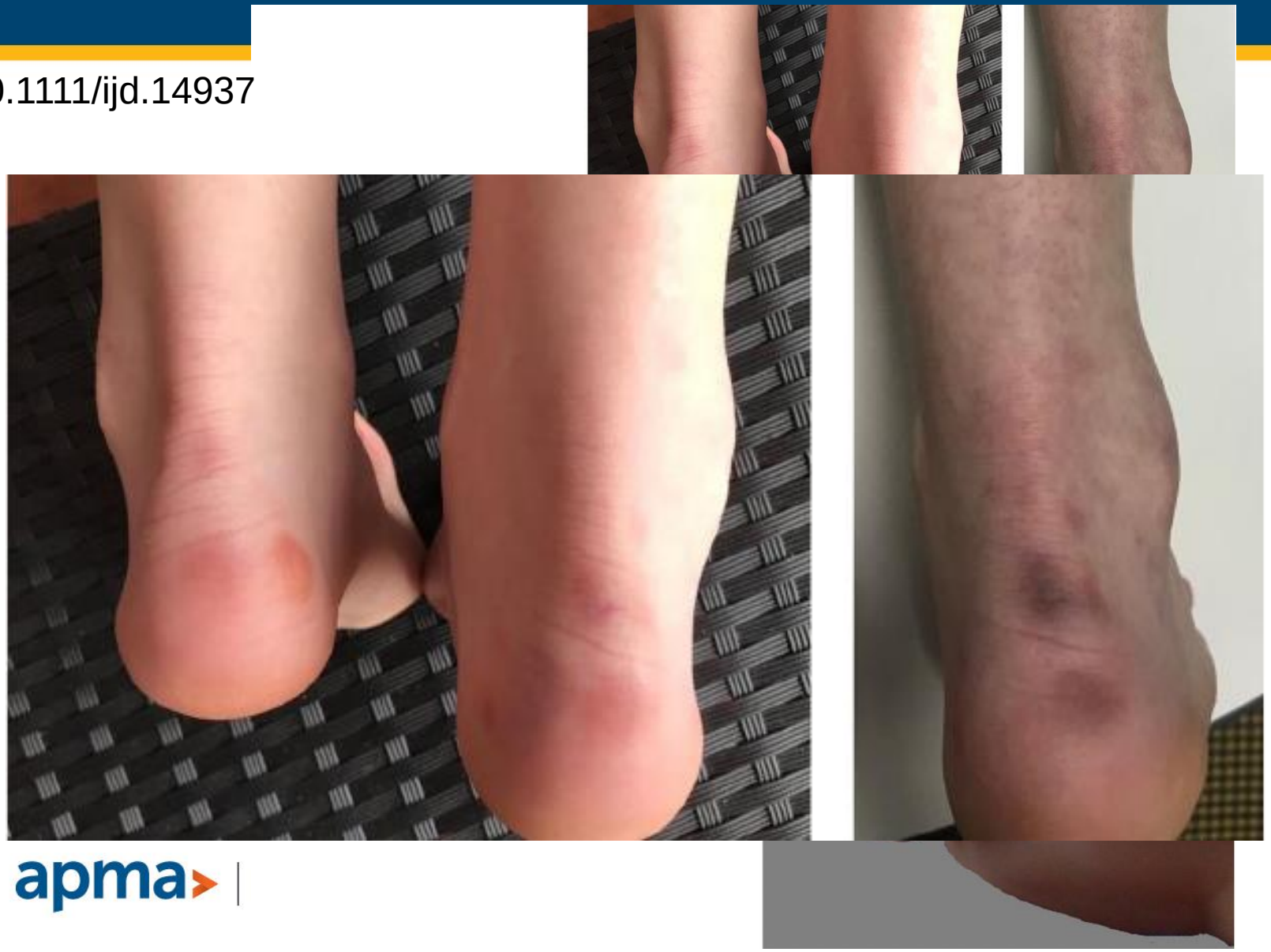

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Chilblains in Italy

Piccolo et al, Letter to the editor, in JEADV

Chilblain-like lesions

Preliminary results of 63 patients from a google doc form

Median age 14, feet alone affected 85.7%, erythematous lesions with pain, itch, and some blisters

In addition, GI symptoms, respiratory, fever

Swab performed in 11 pts, only 2 positive

One was positive for mycoplasma pneumoniae, and parvo B19 high rate

Auto-immune disorders in 6; some had positive co-habitants

https://doi.org/10.1111/jdv.16526

Chilblains in Italy

Defined as Chilblains-Like Lesions (CLL)

Hypothesis: coronavirus is responsible

Testing difficult to do as most were asymptomatic

"As concerning etiology, we are still far from scientifically defining CLL as a manifestation of COVID- 19"

Delayed immune reaction to the virus

"Children…with skin manifestations…should be considered contagious"

https://doi.org/10.1111/jdv.16526

Acro-ischemia

Digital gangrene, bullae, cyanosis

-Zhang et al 7 COVID-19 pts from Wuhan: DIC, hypercoagulable state

-Fernandez-Nieto retrospective review of 132 patients in Spain

- **-2/11 diagnosed with COVID-19 via nasal swab**
- **-16 had symptoms before skin lesions (range 3-30 days)**
- **-skin lesions lasted 2-24 days; none had pneumonia**
  - **-chilblains-like in 95 pts; erythema multiforme-like in 37 pts**
  - **-late manifestation, coagulation disorder, or hypersensitivity?**

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DOI: 10.3760 / cma.j.issn.0253-2727.2020.0006
doi: https://doi.org/10.1016/j.jaad.2020.04.093

Skin and Viral Infections

Viral infections cause skin issues/exanthems

-Prodrome first: fever, malaise, headache, GI

-Measles, rubella, chickenpox/shingles, dengue fever, fifth dx, pityriasis rosea, hand/foot/mouth dx, viral warts, vasculitis (seen in Influenza, HIV, Hep B and C), Kaposi's sarcoma (HHV-8), urticaria (hives)

-Viremia and skin exanthems have different time kinetics in different diseases:

- **-viremia of measles peaks when skin rash presents**
- **-viremia of parvovirus B19 ends before skin rash begins**

https://doi.org/10.1111/jdv.16469

Coronavirus and the skin

Coronavirus has been around for centuries…

Chesser et al reported an 8-month-old with fever, mild cough, progressive purpura and extremity swelling that extended from thighs to feet

Acute hemorrhagic edema of infancy (leukocytoclastic vasculitis) and often preceded by viral infection; resolution in 3 days

Positive for coronavirus NL63

Case Rep Pediatr. 2017; 2017: 5637503

Coronavirus and the skin

Novel coronavirus SARS-CoV-2 is the cause of COVID-19

-Unknown prevalence and pattern of COVID-19 viral exanthem

-Is there anything that differentiates it from other viral rashes?

-At this point, characteristics like many other viral infections

-20% have skin lesions? **THIS IS NOT FROM A STUDY!**

-It comes from Recalcati's JEADV article showing 20% (18/88 pts) had trunk lesions: red rash and chickenpox-like

-8 had lesions at onset, 10 after hospitalization

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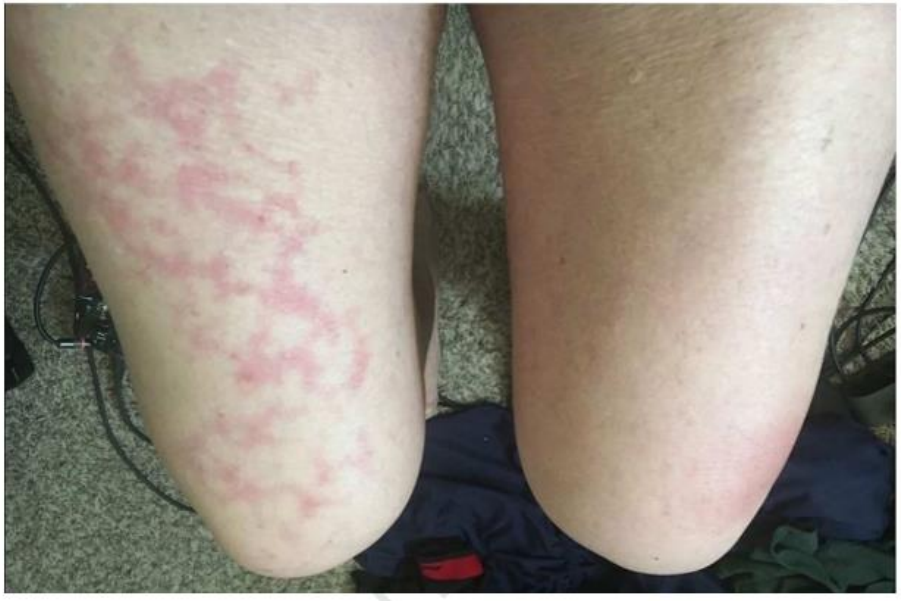
https://doi.org/10.1111/jdv.16530

Coronavirus and the skin

Reports from around the world:

Tammaro et al (Italy) JEADV: 3/130 pts had herpetic-like lesions on trunk

Manalo et al JAAD: had 2 cases of confirmed COVID-19 and transient livedo reticularis



https://doi.org/10.1111/jdv.16387
https://doi.org/10.1016/j.jaad.2020.04.018

Coronavirus and the skin

Reports from around the world:

JEADV: 14 COVID-19 confirmed patients

Skin symptoms began after COVID-19 symptoms

- **7/14=exanthem**
- **7/14=violaceous macules**
- **2/14=chilblains**

BUT…40 others had chilblains like lesions and tested negative (6) or not performed. Are these due to something else?, A post-viral immunologic response?, or Represent a subgroup with a peculiar immune anti-viral response?

https://doi.org/10.1111/jdv.16544

What are the issues with these reports, commentaries, letters to the editor?

-Due to the regulations in place, COVID testing may not have been performed, so correlation is speculative in many of these papers. Data over time will help with this.

-Often no pictures or histopathologic correlation. Most have been listed on the journal website due to timeliness and may not have had a thorough peer review.

-Many viral infections cause skin manifestations. These reports show heterogeneity. They raise more questions than provide answers.

What are the issues with these reports, commentaries, letters to the editor?

-Underlying systemic issues or medications may cause skin lesions, so imperative to rule those out.

-The difference between those who are in respiratory distress vs those who are asymptomatic. Read the literature critically. Don't go by hearsay.

-It is good to be vigilant that this may exist, but don't put your blinders on and think every skin rash source is coronavirus. Consider appropriate differential diagnoses.

Coronavirus affecting other skin conditions

-Psoriasis--biologic therapy and risk of being in an "immunocompromised state"

-Atopic Dermatitis--frequent hand washing/hand sanitizers causing flares and face mask irritation

-Melanoma—delays in diagnosis and clinical trials halted

-Vitamin D deficiency and majority of time being spent indoors

-Cosmetic procedures

“COVID-toes” or people are looking at their feet more than usual

What is the actual correlation between the pedal manifestations and COVID-19, if any? If so, what is the percentage of occurrence, timing, and its relation to severity of disease? Does age play a role?

Will these pedal lesions help diagnose COVID-19 in those who are asymptomatic? Must consider ethics/testing supplies. Will this change the course of treatment if self-isolation is in place? Are the patients still infectious to others? Should this be added to criteria for COVID-19 testing?

So far, the cases I have seen and been sent (>20), only 1 person has tested COVID-19 positive. Hypotheses?

Key Points to Consider

-Thorough History and Physical Exam are key

-Timing of when lesions occurred with any symptoms

-Evolution of lesions, Extent of presentation

-Asymptomatic vs Being Hospitalized

Hypercoagulable state, DIC, respiratory distress

-PMH, Medications, Contacts who are symptomatic or are COVID-19 positive

-Biopsy of skin if warranted, Dynamic viral load collection and its timing to skin rash

-Regulations for COVID-19 testing in your area

In your practice

-When faced with a patient who has skin manifestations that have a high index of suspicion, be a detective, thorough, and logical in your assessment

-Do appropriate testing if warranted (lab tests, skin biopsy)

-If no other diagnosis fits the clinical picture, you may consider COVID-19 as a differential diagnosis. Patient should follow CDC and local guidelines of social distancing, self-isolation, and self-monitoring

-Depending on your local regulations and discussion with the patient, you may consider viral testing or in some cases antibody testing

Last word

“While better testing for COVID-19 and more lesion biopsies will play a critical role in differentiating etiologies, we must not overcall COVID-19–related skin eruptions and potentially overlook other diagnoses,”

The goal is "to better determine COVID-19 pathophysiology, systemic associations, patient outcomes, and potential therapeutics."

--Dr. Kristen Lo Sicco, Dermatologist, NYU

Heterogeneity Seen in COVID-19 Skin Manifestations - Medscape - May 05, 2020.

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Questions?

Thank you!