Andes-like hantavirus infections in returning travelers from Paraguay

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Disclosures

- Financial: I have consulted as a subject matter expert on Hantavirus for *Elsevier's Clinical Overviews*
- Committees: I serve as a volunteer member of the *ACGME Internal Medicine Recognition and Review Committee*

Patient A: 61-year-old male with no past medical or surgical history who presented to the ED with abd pain, diarrhea and mild thrombocytopenia

Traveled to Paraguay for 3.5 weeks on an archeological dig with 16 participants

Presented to the ED 26 days after returning to the US

Normal oxygen saturation, WBCs, temp, imaging

Patient received symptomatic txt and was discharged

Returned to ED same day with fever and hypoxia

Noted to have worsening thrombocytopenia

Admitted to the hospital

Patient continued to clinically deteriorate after admission

Over 6 days - developed acute hypoxic respiratory failure and pulmonary edema

Worsening thrombocytopenia

Required high flow oxygen

Aggressive diuresis initiated

On day 9, orthohantavirus-specific IgM and IgG antibodies were detected

Hantavirus was subsequently detected by PCR at UNM

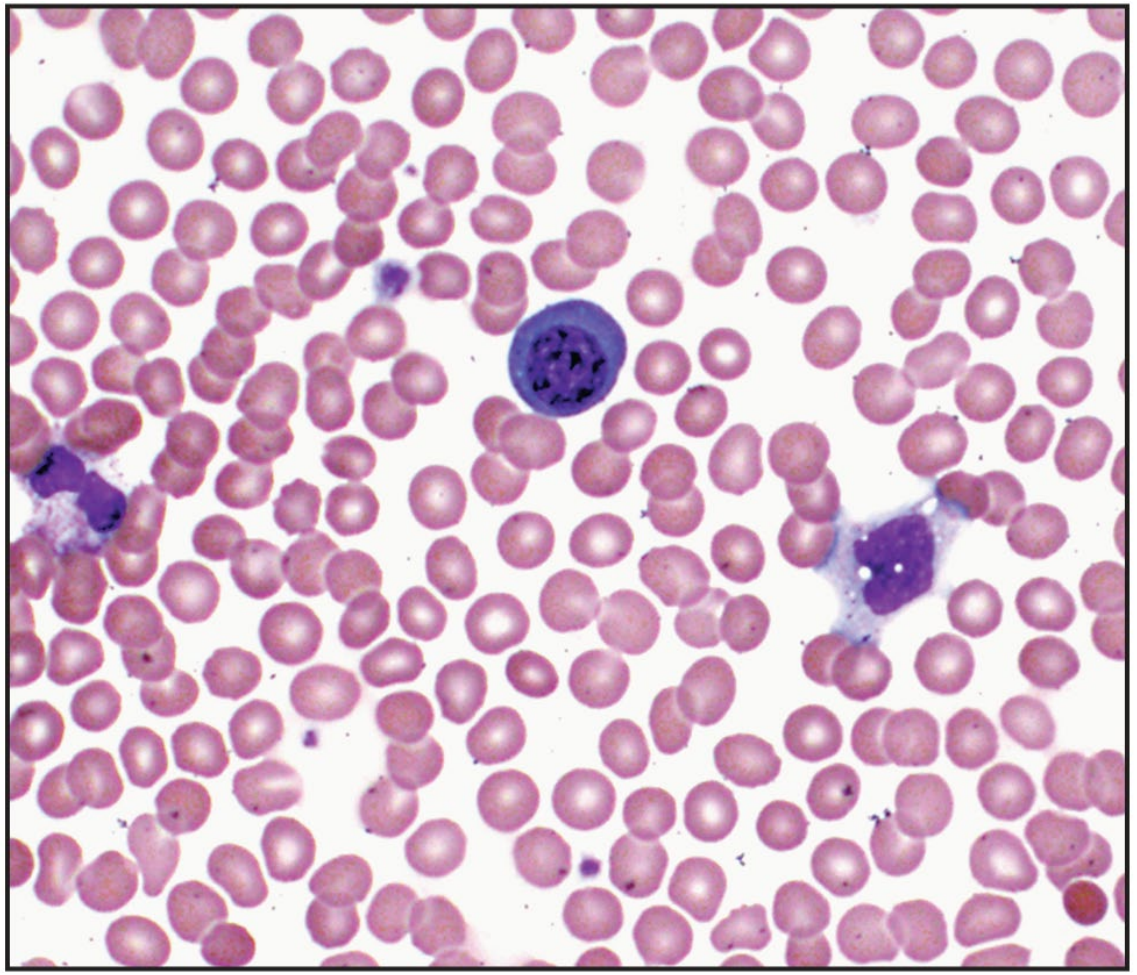
Confirmed by CLIA-validated assay at the California Department of Public Health (CDPH)

Broad work up for infectious etiologies ruled out Flu, COVID, EBV, CMV, bacterial pneumonia + parasitic etiologies

Patient began to improve 7 days after admission with decreasing O2 requirement

Review of the peripheral smear revealed several features concerning HPS

- Obtained 3 days after admission
- Thrombocytopenia
- Hemoconcentration
- Immunoblasts (35%)
- Increased immature neutrophils



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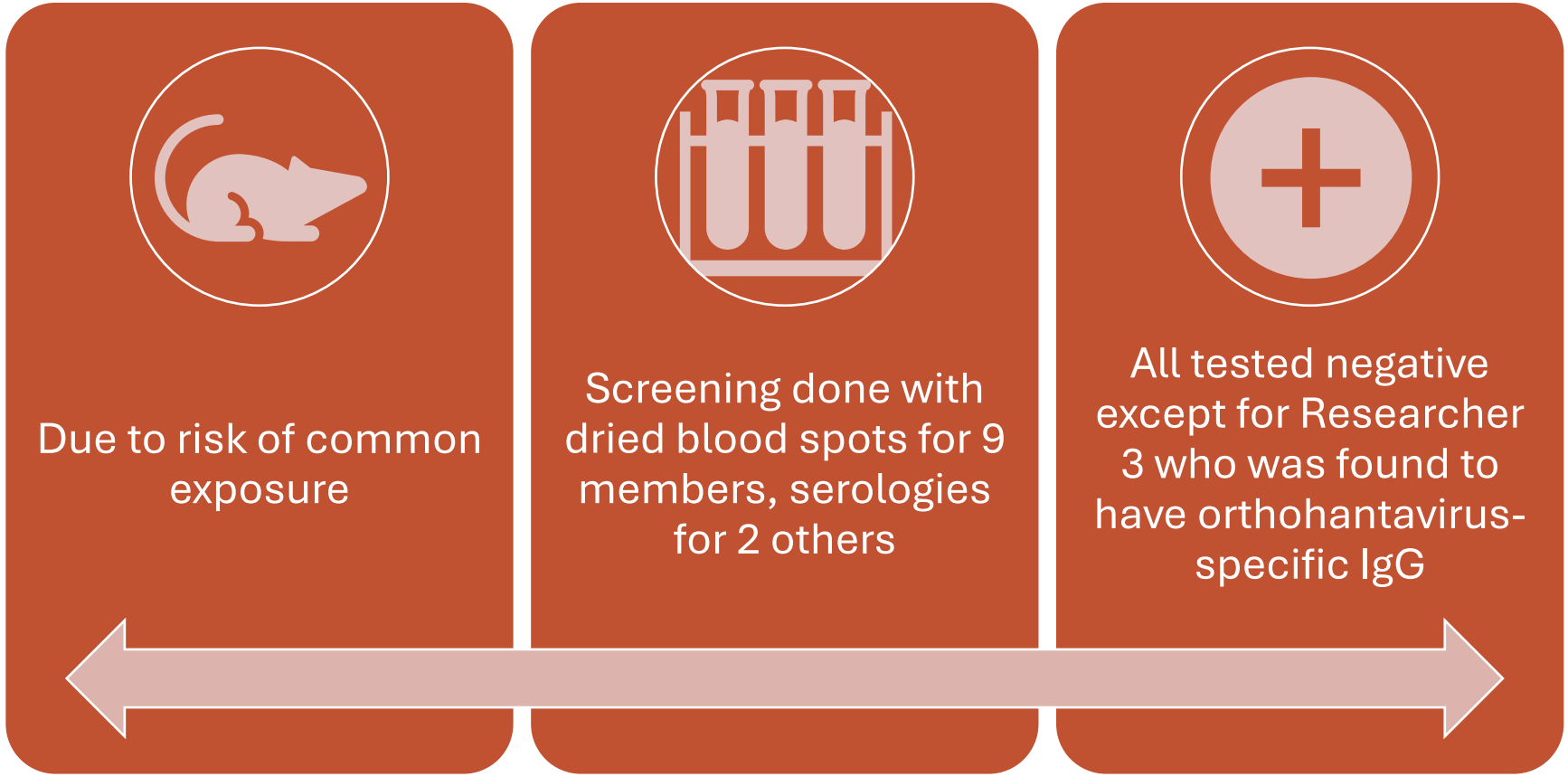
Following the diagnosis of HPS, testing for hantavirus was performed on all other US-based expedition members



Subsequent serum RT-PCR testing identified orthohantavirus in Researcher 3 (Patient B)

Patient B was a 21-year-old female with no past medical history

Patient was asymptomatic at the time of interview

History revealed Patient B had gone to ED 4 days prior to Patient A with nausea, vomiting, and diarrhea

Patient B was seen in ED for intractable nausea, vomiting and diarrhea 11 days after her return from Paraguay

Seen in the ED. Labs and imaging unremarkable

Discharged after symptomatic treatment

Still symptomatic, advised to return to the ED

Next day, contacted by ED for follow up

Hypoxic, with thrombocytopenia, CXR showed pulmonary edema

Improved with incentive spirometry

Discharged with symptomatic treatment

Patient was seen multiple times in the Emergency Department

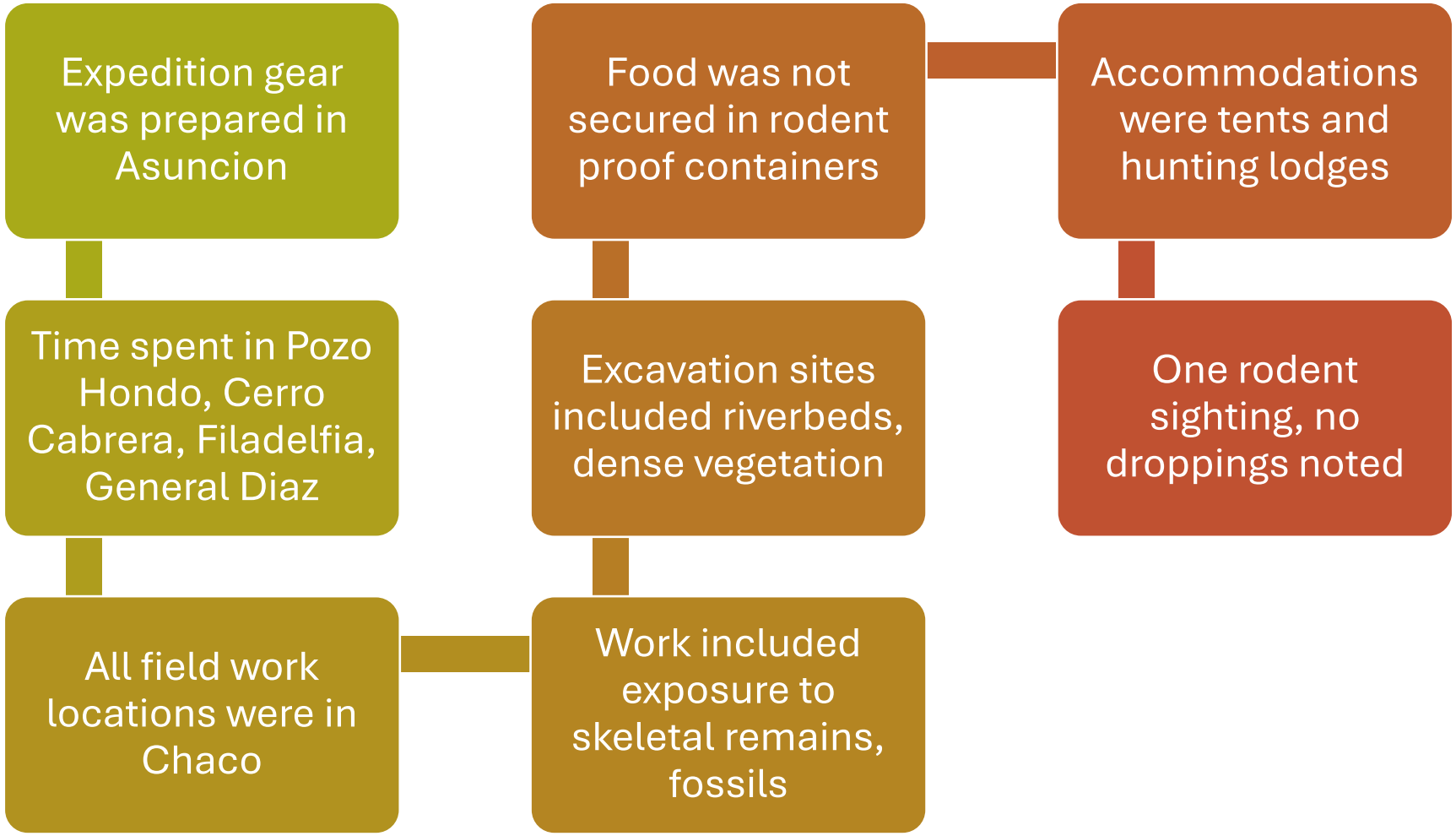
Returned to the ED 10 days later with diarrhea, fatigue and abd pain

Labs with mildly elevated transaminases, other labs normal

Extensive testing for viral and GI parasites was negative.

She was discharged him with PCP follow up and fully recovered without hospitalization

Risk Factors and Exposures



Orthohantavirus species assignment

- The timeline of symptom onset was consistent with potential exposure in Paraguay or the US
- Hantavirus species endemic in both regions were suspected

Suspected Viruses

- Laguna Negra virus
- ANDV + Andes-like virus
- Sin Nombre virus

Two rRt-PCR experiments were performed

- CLIA-validated assay → US orthohantaviruses
- Multiplex assay targeting SNV and ANDV

Whole genome sequencing revealed a 94.4% match with Andes-like virus

Due to the unknown potential for person-to-person transmission with Andes-like virus, CDC recommended airborne precautions for all suspected cases

Standardized exposure definition was developed

- Including type and duration of exposure

Total of 95 contacts were identified

- Patient A = 80
- Patient B = 15

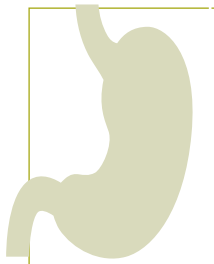
Contacts included:

- 3 household members
- 90 HCWs
- 2 social contacts

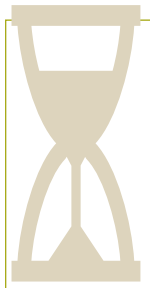
Contacts were monitored for 49 days

- 2 developed GI symptoms, but testing for HV was negative

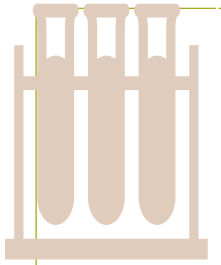
Key Takeaways



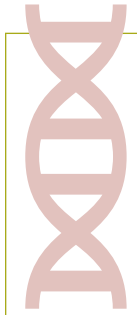
New World Hantaviruses, particularly those in South America, often present with GI symptoms (abd pain, diarrhea, etc.)



The incubation period for New World Hantavirus is long (2 - 49 days); thorough history and high index of suspicion are necessary to make diagnosis



HPS is diagnosed through serologies (IgM and IgG). IgM, though not specific, is almost always present at the time of symptoms onset



PCR is highly effective in diagnosing HV HPS, however there is not an FDA approved PCR for diagnostic purposes

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- Albert Einstein College of Medicine

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