Seeing spots and jumping through hoops. A case of Rocky Mountain Spotted Fever in rural Arizona

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CASE REPORT

17-year-old Mexican male with no significant past medical history presented to our hospital in rural Arizona with new onset fever, jaundice, petechiae, leukocytosis, thrombocytopenia, hyponatremia, elevated transaminases, dark urine and hepatosplenomegaly. Initial differential diagnoses were broad, and patient was transferred to a university hospital for higher level of care.

Patient was started empirically on broad-spectrum antibiotics for meningitis coverage. At the UMC, Infectious disease specialist was consulted and recommended starting doxycycline for empiric treatment of Rocky Mountain Spotted fever (RMSF). Despite thoughts of rheumatic fever and endocarditis, normal echocardiogram findings and absent Jones criteria pointed otherwise. While high liver enzymes led to Gastroenterology consultation for hepatitis, negative tests and response to doxycycline diminished this suspicion. Hematology was consulted for potential HLH but the patient didn't meet its criteria.

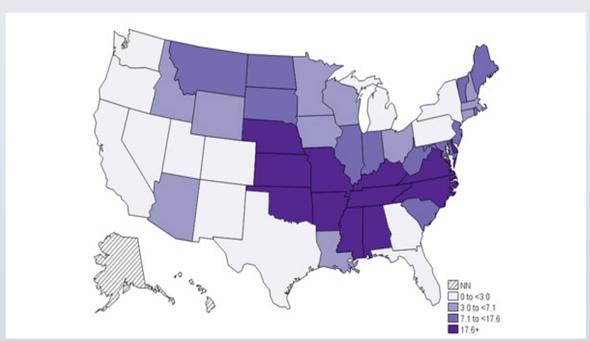
Remarkably, the patient improved significantly on doxycycline and was discharged. Subsequent results confirmed RMSF diagnosis.

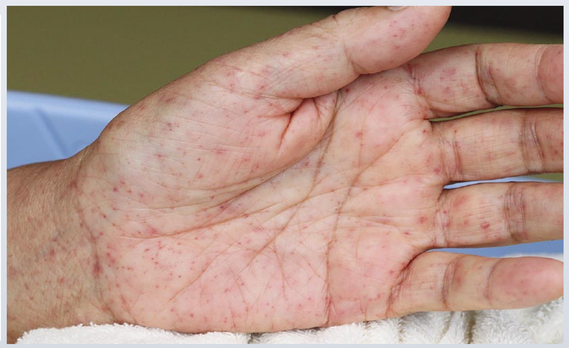
RESULTS

Initial labs

WBC	**36,000/mcl**	**T-bili**	**17 mg/dl**
Neut	22,600/mcl	**D-bili**	**12.9 mg/dl**
Lymph	8000/mcl	Alk-Phos	388 IU/l
Plt	39,000/mcl	**AST**	**421 IU/l**
Sodium	124 mmol/L	**ALT**	**158 IU/l**
CHL	89 mmol/L	Trig	>525 mg/dl
Creat	1.0 mg/dl	Ammonia	71 mcg/dl

HIV	**NEG**
HBV	**NEG**
HCV	**NEG**
RPR	**NEG**
FLU	**NEG**
COVID	**NEG**
Gonorrhea	**NEG**
Chlamydia	**NEG**





Left: Incidence per million. Right: Characteristic hand palm rash. Source: CDC

Table 1: Differences in RMSF Epidemiology, Arizona vs. United States (1, 3, 12)

	Arizona	United States
High volume of free-roaming dogs Tick vector	Present Brown dog tick	Absent American dog tick Rocky mountain wood tick
Seasonality	Two peaks (May & August)	One peak (June/July)
Area Acquired	Near the home	Forest/wood settings
Age Distribution	Younger (<18 years)	Older (55-65+ years)
Case Fatality Rate	7%	<1%

Source: Arizona Health Department

DISCUSSION

This case highlights RMSF's unusual presentations and the importance of empirical antibiotic treatment. Early RMSF detection and immediate doxycycline commencement is critical, as treatment delays possibly lead to complications or death. RMSF diagnosis is difficult in rural areas due to access barriers to specialist services and necessary laboratory testing. Moreover, healthcare providers often hesitate to prescribe doxycycline to young people fearing side effects.1

Overcoming these barriers, like improving local provider RMSF awareness, enhancing diagnostics, and ensuring swift access to antibiotics, is crucial for improving health outcomes in underserved regions.2

RESOURCES/REFERENCES

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