Distribution of Joint Involvement for Arbovirus-Associated Persistent Arthralgia May Help Distinguish Between Similar Diseases

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Introduction

- Arbovirus infections associated with persistent arthralgia are imported by travelers from endemic areas.[1]
- Misdiagnosis often occurs due to overlapping clinical presentation and lack of widely available diagnostic testing.[2]
- Identifying differences in joint involvement may facilitate an earlier diagnosis at clinical presentation.[3]
- The purpose of this study was to determine if such distinct joint involvement has been reported in the literature for arbovirus-associated persistent arthralgia.

Methods

- Chikungunya (CHIKV), Ross River Virus (RRV), Sindbis Virus (SINV), Mayaro Virus (MAYV) were selected given their association with persistent arthralgia.[4,5]
- PubMed was used to identify candidate manuscripts that included patient data on persistent arthralgia and specific joint involvement.
- Joint involvement data was manually extracted and compared using Fisher's exact test.
- Pairwise post-hoc comparisons were then conducted using Fisher's exact test and a Bonferroni correction was applied.
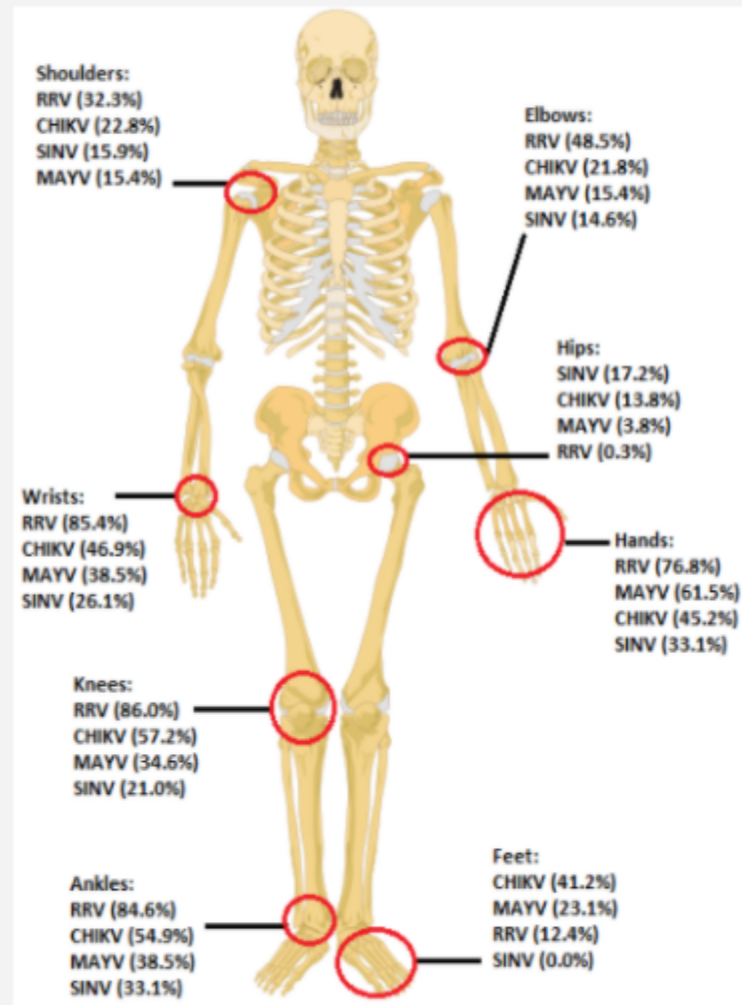
Results

Shoulders:
RRV (32.3%)
CHIKV (22.8%)
SINV (15.9%)
MAYV (15.4%)

Elbows:
RRV (48.5%)
CHIKV (21.8%)
MAYV (15.4%)
SINV (14.6%)

Hips:
SINV (17.2%)
CHIKV (13.8%)
MAYV (3.8%)
RRV (0.3%)

Wrists:
RRV (85.4%)
CHIKV (46.9%)
MAYV (38.5%)
SINV (26.1%)

Hands:
RRV (76.8%)
MAYV (61.5%)
CHIKV (45.2%)
SINV (33.1%)

Knees:
RRV (86.0%)
CHIKV (57.2%)
MAYV (34.6%)
SINV (21.0%)

Ankles:
RRV (84.6%)
CHIKV (54.9%)
MAYV (38.5%)
SINV (33.1%)

Feet:
CHIKV (41.2%)
MAYV (23.1%)
RRV (12.4%)
SINV (0.0%)

Figure 1. Distribution of Reported Joint Involvement

- Data from 1,833 patients were extracted from 57 manuscripts that met inclusion criteria (RRV= 194, SINV = 87, CHIKV = 1,526, MAYV = 26).

Virus Comparisons	P	Adjusted P
MAYV vs CHIKV	0.4	0.8
MAYV vs RRV	0.077	0.33
MAYV vs SINV	0.57	0.8
RRV vs CHIKV	<.001	0.004*
RRV vs SINV	0.066	0.33
SINV vs CHIKV	0.065	0.33

Table 1. Comparisons by Virus (* indicates significance)

Conclusion

- Differences in the distribution in joint involvement may exist between patients with persistent arthralgia following arbovirus infection. Notably, there is a distinction in joint involvement distribution between RRV and CHIKV infections.
- Inconsistencies in reporting of joint involvement and small sample sizes limits the conclusions that can be made for most of the virus pairs included in this study.
- More patient data is required to further assess differences in clinical presentation between arboviruses.
- Further research to assess differences in joint involvement in arbovirus-associated arthralgia should be consistent in reporting which joints were involved.
- Future studies aimed at elucidating these differences may help develop a more rapid and accurate diagnostic algorithm for persistent arthralgia following infection.
- Consideration of joint involvement distribution, along with travel history and other clinical signs and symptoms, may help distinguish between certain viral pathogens
- Joint involvement alone is unlikely to be an adequate diagnostic tool; patient travel history should also be considered if clinical suspicion for arbovirus-associated persistent arthralgia arises.

Acknowledgements

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