

SPIDERMAN WITH COMPLETE HEART BLOCK



NR Siti, AR Nurul Ellmy, Marlene Ing, YL Lee, KK Gan, VH Ng, CS Lee, M. Md Saed
Emergency & Trauma Department, Hospital Sultanah Aminah Johor Bahru, Malaysia

INTRODUCTION

Spiders (Arthropod: Arachnida) are a group of invertebrate animals, where more than 50 000 spider species worldwide have been described¹ but only some can cause medically significant complications including local or generalised pain with non-specific systemic effects. Cardiovascular manifestations such as myocarditis is very rare². We report a rare case of transient complete heart block after a spider bite in a young gentleman with unremarkable medical background.

CASE REPORT

A 33 year old gentleman with no known medical problem or allergy, referred to our Emergency and Trauma Department, Hospital Sultanah Aminah Johor Bahru (ETD HSAJB) by private clinic for further management after alleged black spider bite.

Initially, he had throbbing pain over his third toes after the bite and the pain subsequently migrated to his central chest 9 hours after the event. He denied diaphoresis, shortness of breath, palpitations, nausea or vomiting. Upon presentation, his vital signs were as follows; blood pressure 126/87 mmHg, pulse rate 72 beats/min, respiratory rate: 14 breaths/min and temperature: 37°C. His left foot examination revealed a minimal swelling with tenderness over the tip of his left third toe. His electrocardiogram (ECG) showed complete heart block (Figure 1). Despite raised Creatine Kinase, all his other investigations including echocardiogram were insignificant. He was eventually discharged after uneventful observation with complete resolution of the complete heart block.

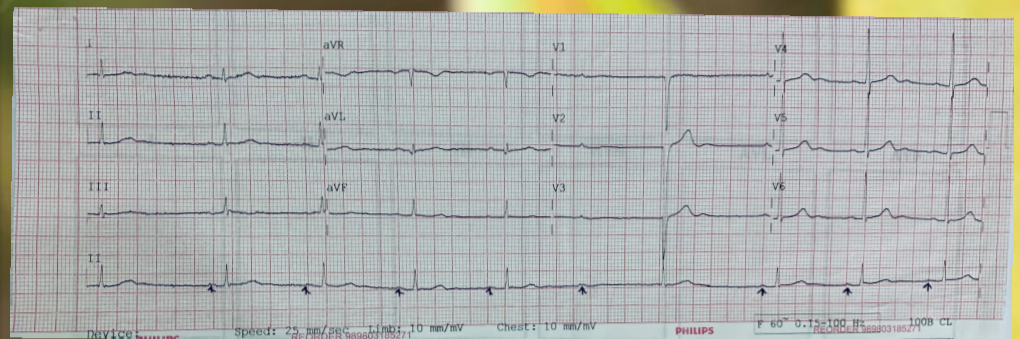


Figure 1

DISCUSSION

“Araneism”, a preferred collective term for envenoming spider bites, are further stratified by systemic manifestations, such as necrotic araneism (for *Loxosceles* and *Cheiracanthium* bites) or *Latrodectism* (for *Latrodectus* species or widow bites)⁴. Victims with spider bites that have presented with cardiovascular manifestations that has been reported so far are always being associated with *Latrodectism* and summarised in the table below.

YEAR	AUTHORS	AGE	SPECIES	SYMPTOMS & SIGNS	ELECTROCARDIOGRAM	BLOOD INVESTIGATION	ECHOCARDIOGRAM	OUTCOME
2007	Bulent Erdur MD ⁶	22	Adult female <i>L. tredecimguttatus</i>	Hypertensive, tachycardia, diaphoresis	ECG: the rhythm was sinus at a rate of 78 per minute and atrial depolarization abnormalities seen	elevated TWC and cardiac markers	EF 50%, anterior and septal wall motion abnormality	discharged
2010	Ataman Kose, MD ⁷	22	Black spider	Normotensive, tachycardia, diaphoresis	ECG: revealed sinus tachycardia associated with minimal nonspecific ST-T wave changes	Elevated TWC and cardiac marker		discharged
2007	Ibrahim Sari MD ⁸	65	Black widow spider	Normotensive, tachycardia, diaphoresis	ECG 0.5-mm ST-segment elevation in leads II, aVF, and V ₃ through V ₆ and accompanying augmentation in T-wave amplitude in leads V ₃ through V ₆ without reciprocal changes	Raised cardiac marker.	Normal ECHO and angiogram	discharged
2013	Hasan Kara ⁹	20	Black spider	Diaphoresis, hypotension, tachycardia	Normal	Elevated TWC and cardiac marker	Minimal left ventricular wall movement disorder	discharged
2013	Hasan Kara ⁹	33	Black spider	Severe chest pain,	Normal	Elevated TWC and cardiac marker	Normal	discharged
2015	Mehmet Yaman ¹⁰	15	Black widow spider	Hypertensive, tachycardia, s3 present, bibasal fine crepitations (acute pulmonary edema)	Sinus tachycardia, ST depression II, III, aVF, I, aVL, V3-V6		Mildly dilated LV, global hypokinesia, EF 22%	discharged
2014	Lykourgos-Christos Alexakis, MD ¹¹	64	Black spider	Hypertension, tachycardia, subsequently developed acute pulmonary oedema.	T wave flattening in aVL lead.		LV ejection fraction was 36%.Hypokinesia of the basal and middle segments of the left ventricular walls with complete sparing of the apical segments	discharged

The atrioventricular block is defined as a transient or permanent delay or interruption in the transmission of the electrical impulse from atria to ventricles, due to an anatomical or functional impairment in the conduction system⁵. Causes of AV block could range from myocardial infarction, metabolic, degenerative, infective, rheumatic, infiltrative processes, drugs, and toxins. Even though a case of transient heart block caused by tick bite (Lyme disease) has been reported¹², a transient complete heart block in a patient with a spider bite a yet to be reported.

The mechanism on between the electrocardiographic changes recorded in spider bite victims are still unclear, however, experimental evidence suggests that alpha latrotoxin, the most active component in the venom, causes release and depletion of acetylcholine and norepinephrine and other neurotransmitters from synaptic terminals and inhibits their reuptake. The nerve ending depletion could give rise to symptoms like hypertension and tachycardia⁶. However, there are no clinical studies to confirm this experimental hypotheses yet⁶.

CONCLUSION

Complete heart block after spider bite is rarely encountered with uncertain prognosis even though our patient was discharged well. Baseline ECG for all cases bitten by a spider should be made mandatory to elicit this potentially lethal and treatable complication.

REFERENCES

- Cesaretti, Y. and Ozkan, O., 2011. A clinical and epidemiological study on spider bites in Turkey. *Asian Pacific journal of tropical medicine*, 4(2), pp.159-162.
- Gueron, M., Iliia, R. and Margulia, G., 2000. Arthropod poisons and the cardiovascular system. *The American journal of emergency medicine*, 18(6), pp.708-714.
- Sulaj, Z., Vyshka, G. and Gashi, A., 2015. Analysis of cases caused by acute spider bite. *Journal of Acute Disease*, 4(3), pp.255-258.
- Diaz, J.H., 2004. The global epidemiology, syndromic classification, management, and prevention of spider bites. *The American journal of tropical medicine and hygiene*, 71(2), pp.239-250.
- Sauer, W., 2013. Etiology of atrioventricular block. UpToDate. Waltham, MA.
- Erdur, B., Turkcuer, I., Bukiran, A., Kuru, O. and Varol, I., 2007. Uncommon cardiovascular manifestations after a *Latrodectus* bite. *The American journal of emergency medicine*, 25(2), pp.232-235.
- Kose, A., Bozkurt, S., Lok, U., Zenginol, M., Yildirim, C., Gunay, N. and Kose, B., 2010. Presumptive *Latrodectus* bite with ileus and myocardial involvement. *Wilderness & environmental medicine*, 21(3), pp.271-272.
- Sari, I., Zengin, S., Davutoglu, V., Yildirim, C. and Gunay, N., 2008. Myocarditis after black widow spider envenomation. *The American journal of emergency medicine*, 26(5), pp.630-e1.
- Kara, H., Ak, A., Bayir, A. and Avci, A., 2013. Reversible myocarditis after spider bite. *Case Reports*, 2013, p.bcr2013008957.
- Yaman, M., Mete, T., Ozer, I., Yaman, E. and Beton, O., 2015. Reversible Myocarditis and Pericarditis after Black Widow Spider Bite or Kounis Syndrome?. *Case reports in cardiology*, 2015.
- Alexakis, L.C., Arapi, S., Stefanou, I., Gargalianos, P. and Astriti, M., 2015. Transient reverse takotsubo cardiomyopathy following a spider bite in Greece: a case report. *Medicine*, 94(5).
- Bacino, L., Gazzarata, M., Siri, G., Cordone, S. and Bellotti, P., 2011. Complete atrioventricular block as the first clinical manifestation of a tick bite (Lyme disease). *Giornale italiano di cardiologia (2006)*, 12(3), pp.214-216.