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# Brown Recluse Spider in the Mediterranean Region: A Review of the Literature

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Spiders are eight-legged arthropods that belong to the arachnids class and are found on every continent except Antarctica.<sup>1</sup> As of 2020, there are over 48000 recognized species of spiders with more than 5000 in the Mediterranean area.<sup>1</sup> Out of these, only two spiders, the *Latrodectus tredecimguttatus* and the *Loxosceles rufescens* are of medical significance in the Mediterranean area.<sup>1</sup> Although most spider bites are benign; however, severe reactions and life-threatening envenomation do occur.

The Mediterranean recluse, *Loxosceles rufescens* - also known as the violin spider, has recently shown emerging cases recently in the warm Mediterranean climate.<sup>1</sup> Many were mentioned in several reports by the National Poison Information Center in Turkey discussing around 82 cases and more.<sup>1</sup> Nevertheless, these cases were slightly reported or never thoroughly studied. Consequently, we discuss the prevalence of brown recluse spider envenomation in the Mediterranean area as well.

This specific species of the brown recluse spider has always been a native of the Mediterranean basin which became a cosmopolitan due to its tendency to spread all over the world, mainly Australia, Asia, and America.<sup>2,3</sup> It is a discreet tiny brown spider, measuring around 9 mm with distinctive genitalia and a specific arrangement of 3 pairs of eyes.<sup>1</sup> Unlike the usual recluse group, the anterior eyes separated from the laterals by 1.5 to 2 diameters rather than the usual 1 diameter.<sup>4</sup> Its venom is potentially dangerous and contains a group of enzymes known as sphingomyelinases-D responsible for inflammation, dermis necrosis, hemolysis, renal

failure, and thrombocytopenia.<sup>1</sup> The clinical picture, commonly identified as loxoscelism, includes skin manifestations that may or may not be coupled with visceral features.<sup>1</sup> The bite is initially pain-free so it can be easily unnoticed. The itching and burning sensation can be delayed several hours after the bite.<sup>1</sup>

In 2019, Abbott et al. reported a case in Pavia, Northern Italy, of a third-year medical student who was bitten by a spider identified by the entomologist as *L. rufescens*.<sup>5</sup> It started as a diffuse exanthema expanding from the shoulder to the adjacent lymph nodes with a necrotic area.<sup>5</sup> His cutaneous lesion was associated with nausea, malaise, and headache. After 48 hours, the large local reaction and the symptoms subsided. In the following two weeks the eschar fell off.<sup>5</sup> This case describes the cutaneous “dermatonecrotic” form of loxoscelism. Five similar cases were reported in Italy with different clinical and outcome extents. Two cases reported bites to the upper eyelid, the first one was in 2012, in Cagliari, and the second one in Northern Sardinia in 2006.<sup>6,7</sup> The first case required a reconstruction of the retro-auricular area with a skin graft, and the second case resolved after debridement with a healing process of 5 weeks.<sup>6,7</sup> In Catanzaro Italy, in 2016, a lady with a known medical history of Myasthenia gravis developed rhabdomyolysis, disseminated intravascular coagulation, and renal failure after a finger spider bite.<sup>8</sup> After 12 hours of hospitalization, the patient passed away which recorded the first loss from a visceral loxoscelism.<sup>8</sup> The other two cases reported by a group of plastic surgeons were in Sardinia, leg and forehead bites which both healed after surgical debridement and full-thickness skin grafts.<sup>7</sup>

To date, two cases, a spider bite to the trunk and another to the thigh, have been reported in the Maltese Islands. The first was by Dandria et al. in 2002 and the second by Cachia et al. in 2016.<sup>9,10</sup> Both cases resulted in minimal systemic symptoms and with complete resolution of the eschar in two weeks.<sup>9,10</sup> Dr.Elghblawi reported in 2009 in Tripoli, Libya, a case of a pregnant

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woman who developed only cutaneous manifestations post a brown recluse spider bite.<sup>11</sup>

In 2013, in Fréjus Southern France a case of arm cellulitis was reported after an 81-year-old male crushed a spider with his hand. The skin lesions responded to supportive treatment and analgesics without antibiotics.<sup>12</sup> In May 2015, another case of a 36-year-old woman with cutaneous loxoscelism was also reported in Southern France.<sup>13</sup> However, the local reaction on her internal thigh worsened and progressed to a painful 10 cm ecchymotic lesion with an extensive loco-regional reaction requiring five weeks of admission for IV antibiotics, surgical excision, and pain control.<sup>13</sup> Additionally, a similar case of a 33-year-old lady was reported in Portugal in 2014 and was published in the *Acta Médica Portuguesa*.<sup>14</sup>

In the region of Siirt Turkey, two cases of cutaneous loxoscelism were reported in 2007.<sup>15</sup> In both cases upper eyelid spider bites resulted in mild reaction that resolved with saline and ocular lubricants.<sup>15</sup> The second case was the first and the only reported pediatric case in the region. The *Loxosceles reclusa* venom was identified through ELISA technique in both patients; a novel method to confirm the diagnosis.<sup>15</sup> In 2005, one case of a brown recluse spider was reported in a young lady in Istanbul Turkey, who ended up with an eschar that required surgical debridement and a foot skin graft.<sup>16</sup> Cases from Crete, Greece have been also reported.<sup>17</sup> According to a review published in the *Journal of toxicology* in 2007, 11 cases were described in Israel between 1988 and 1997.<sup>18</sup> Until today, no cases of brown recluse spider bites in Lebanon have been reported in literature.

The MENA region is home to a relevant number of spider species, naming at least 27 groups.<sup>19</sup> The two most clinically significant ones are those of the *Latrodectus* spp. and *Loxosles* spp. Multiple venom toxins are implicated, inducing a range of hematologic and cytotoxic manifestations.<sup>19</sup> All around the globe, an estimation of 5 deaths per year from spider envenomation is forecasted.<sup>19</sup> Latrodectism is a form of toxicity caused by a neurotoxin  $\alpha$ -latrotoxin.<sup>19</sup> Its main clinical manifestations remain a local extended reaction, muscles cramps, and generalized pain.<sup>19</sup> Systemic effects such as nausea, vomiting, or headache can occur but are rare.<sup>19</sup> Mortality is reported among the elderly and pediatric population but none is confirmed

in the MENA region or Mediterranean basin so far.<sup>20</sup> Two other species the *L. hasselti* and *L. mactans* are spreading to the region over the years and can result in more severe spider envenomation putting this region's population at risk.<sup>19</sup>

In conclusion, brown recluse spiders are under-recognized in the MENA region. Physicians should be vigilant and suspect a brown recluse spider bite when patients present with a dermonecrotic lesion. Early recognition and proper management can prevent complications and long-term sequela.

**Conflict of interest:** authors declare there is no conflict of interest related to this manuscript.

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