Comments on a recent paper "Jellyfish envenomation with delayed hypersensitivity and concurrent SARS-CoV-2 infection"

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To the Editor:

In their recent article in *Dermatology Online Journal*, Cheema et al. (2024) reported a delayed hypersensitivity from a jellyfish envenomation that co-occurred with a SARS-CoV-2 viral infection [1]. We commend the authors for shedding light on this interesting topic, namely the immunological response and associated dermatological symptoms observed in a patient who was subsequently exposed to SARS-CoV-2 following envenomation by the box jellyfish *Alatina alata* in Hawaii. However, there are a number of statements regarding the taxonomy and the sting envenomation treatment of *Alatina alata* that require modification, restatement, and correction.

Cheema et al., state "Although the species of jellyfish that stung the patient is unknown, the likely culprit is the Al*atina moseri* or *Carybdea alata*, otherwise commonly known as the box jellyfish; these are prevalent in Hawaii and they possess lethal toxins" [1,2]. The correct scientific name for the Hawaii box jellyfish that frequents Waikiki Beach is *Alatina alata* Gershwin, 2005 [3]. There are four species of box jellyfish that occur in waters of the Hawaiian Islands [4]. Cheema et al., cited paper specifically refers to the four-handed box jellyfish (*Chiropsalmus quadrumanus*), [5] and Chesapeake Bay sea nettle (*Chrysaora quinquecirrha*), [5]. These jellyfish species do not occur in Hawaii. Furthermore, the statement that stings of *Alatina alata* are lethal is incorrect. The species of box jellyfish at Waikiki Beach does not produce a lethal sting [6-8]. As part of the envenomated tissue reaction Cheema et al. state "Two weeks after the initial sting, the patient's symptoms recurred." The Hawaii box jellyfish stings have been reported to result in annular papulonodular dermatitis that can persist for up to seven months [1]. Other cnidarian envenomations have also resulted in delayed, as well as long lasting reactions manifesting as recurrent eruptions, granulomatous nodules, and eruptions appearing multiple days after a primary sting exposure [6,7]. As a result, this case report is important to document delayed hypersensitivity from envenomation by *Alatina alata* with concurrent SARS-CoV-2 infection. However, it is equally important to note that delayed hypersensitivity occurs from the stings of multiple species of jellyfish and siphonophores [6,7] in the absence of documented viral infections.

The treatment of *Alatina alata* stings should be considered as a species-specific situation and treatment recommendations should be based on the most recent published literature. Cheema et al., state "After removal of nematocysts, topical lidocaine gel or heat packs may be used for analgesia [10]." Although patients suffering from *A. alata* stings in Hawaii have been treated with heat packs [10], the results of subsequent studies have brought this approach into question. One reason that application

of heat packs may not be ideal is that the pressure created by direct application of heat packs to the box jellyfish sting may worsen envenomation by increasing venom release from nematocysts still present on the skin surface [11]. However, the use of heat packs may be effective if the box jellyfish tentacles are removed from the skin prior to application, and if the heat pack can be maintained at precise temperature for a specific amount of time (45˚C for 20 min), [9]. This approach was tested in in vitro experiments that resulted in a 95% decrease of venom of activity [12,13]. It is also important to note that heat packs such as those that contain sodium thiosulfate may only reach 39.6˚C and peak at this temperature at 2.5min [9]. For additional treatment, Cheema et al., stated "Contrary to the myth, acetic acid (vinegar) is not recommended, given that its effectiveness is noted only against particular species of jellyfish, including the *Carybdea marsupialis*. In some cases, vinegar may promote further nematocyst discharge and subsequent exacerbation of symptoms" [14]. These authors based their comments on stings of *Pelagia noctiluca* and *Carybdea marsupialis* for envenomation and treatment of the focal species here, which again is *Alatina alata*. Cheema et al., stated that "intervention … should be evaluated on a case-by-case basis." This comment should have been mentioned more prominently after providing a questionable treatment protocol for *Alatina alata* stings.

There is a growing body of knowledge regarding effective treatment of jellyfish envenomations, including box jellyfish stings that require a species' specific approach. This relates to the diversity of venom properties, such as dosing, biochemistry, and the response by the patient [15-18].

It is imprudent and potentially dangerous to recommend a single course of treatment for stings of different jellyfish species. For example, the use of vinegar as a treatment for stings has been debated over time and currently is not generally recommended for Portuguese man-of-war (*Physalia physalis*), whereas it is recommended for *Alatina alata* stings [17,18]. We suggest that the authors should cite the most relevant literature [12,13,17,18] for the most effective basis of treatment for *Alatina alata* stings in Hawaii.

Potential conflicts of interest

The authors declare no conflicts of interest.

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