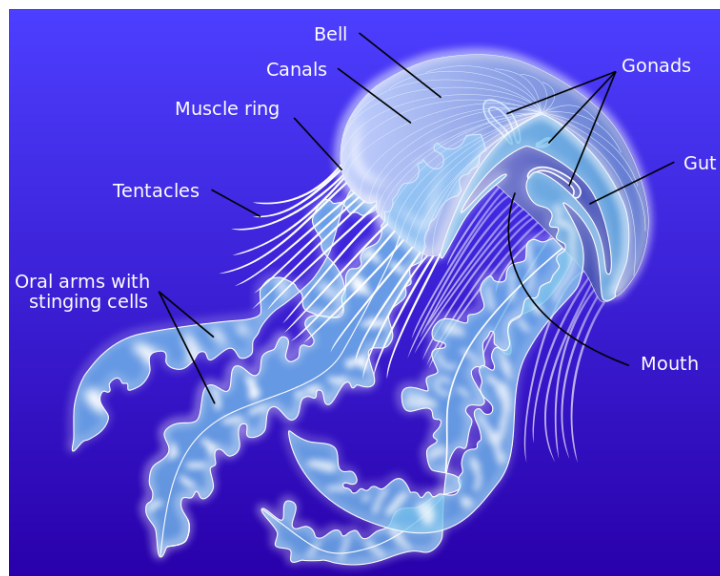


# Mauve Stinger Jellyfish (*Pelagia noctiluca*) Envenomation



**By Stuart M Caplen, MD**

In late August, early September 2022, there were numerous mauve stinger jellyfish (also known as the purple-striped jellyfish and *Pelagia noctiluca*), sightings and stings in Long Island and the Jersey Shore.[1,2] These are typically seen offshore and rarely found on the Northeastern U.S. coastline. Weather and tide conditions were thought to be responsible.[2] This jellyfish is most commonly found in the Mediterranean Sea, but has been seen in other coastal parts of Europe, as well as off the California coast.[3]

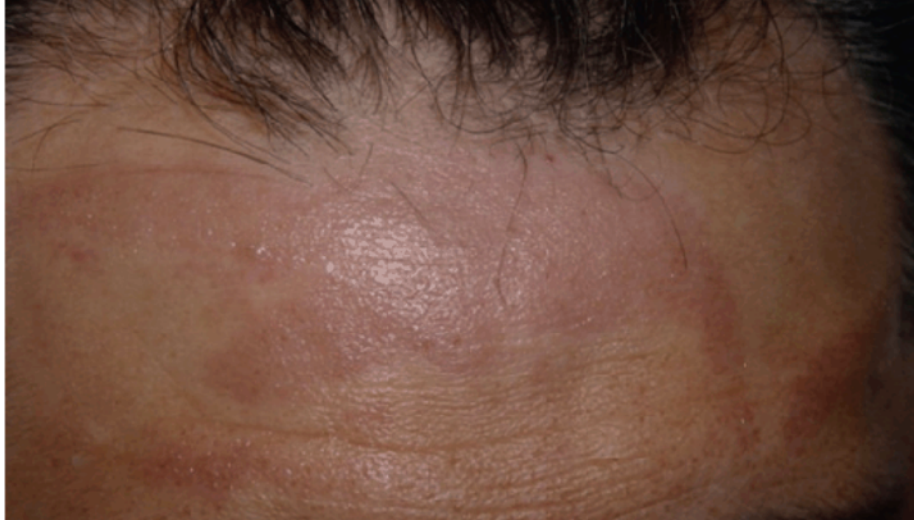


**Jellyfish anatomy[4]**

## **Mauve Stinger Jellyfish Stings**

The mauve stinger jellyfish is typically 1 to 5 inches in diameter and are colored pink, mauve or light brown with a phosphorescent bell. The nematocysts (the stinging cells of a jellyfish) are on the tentacles, the oral arms, and what is somewhat unusual for a jellyfish, on the surface of the bell. Envenomation can occur from contact with either alive or dead mauve stinger jellyfish. Typically, the stings are usually limited to the skin surface and cause only erythematous (reddish), edematous (swollen), and vesicular (blistering) lesions, with localized pain that can last for one to two weeks. Systemic complications or cutaneous infections are rare. The skin lesions can be circular or irregularly shaped, and scarring and hyperpigmentation may occur after healing. The venom is also able to cause severe generalized allergic reactions. Studies have revealed that most stings produce localized skin reactions, but a small percentage will have more serious systemic symptoms. There are no reports of fatalities, and there is a case report of Guillain-Barre syndrome following envenomation.[5] A relapse of the skin rash some years later may occur if re-stung by the mauve stinger jellyfish and has also been reported in some individuals who had no further contact with the jellyfish. There may be some cross reactivity between mauve stinger jellyfish venom and Portuguese man o'war venom which can stimulate an allergic reaction.[3]





**Mauve Stinger Jellyfish Stings[6,7]**

## **Treatment**

The treatment of all jellyfish stings is controversial and the scientific literature in some cases is inconclusive or conflicting. For some jellyfish stings hot water is recommended while in other species ice packs. For some species vinegar (acetic acid) and in others baking soda slurry (sodium bicarbonate) is recommended to inactivate the nematocytes.[8]

Vinegar is no longer recommended by the Red Cross for most jellyfish stings in U.S. waters, as there have been some studies that showed increased release of venom with its use.[9] Several studies found vinegar (acetic acid) increased nematocyst discharge in mauve stingers but seawater did not.[10,11] An in vitro study (a study done in the laboratory) conversely found that vinegar did reduce nematocyst discharge in mouth arm nematocysts.[12]. That same study found that 1% lidocaine, 70% ethanol, and 20% ammonia in vitro reduced nematocyst discharge, but as is not atypical another study found the exact opposite, that ammonia activated the nematocysts.[11] It has also been found that calcium ions may be an important part of nematocyst activation and gadolinium which blocks cellular calcium channels was found to block nematocyst discharge in one study, but had no effect in another.[3,11,13]

The Maltese government has a handout for jelly fish treatment that recommends a baking soda (sodium bicarbonate) slurry (a mixture of 50% commercial baking soda and 50% seawater) for mauve stinger jellyfish stings.[14] Baking soda been found to help inactivate nematocysts in sea nettle stings, but I was unable to find another reference to recommend this treatment for this mauve stinger jellyfish, and sodium bicarbonate has been found to worsen mauve stinger jellyfish nematocyst discharge in vitro in another study.[11] Although there are conflicting recommendations, use of alkaline or acidic

solutions may possibly cause a worsening of the envenomation based on available literature and probably should be avoided.[3]

Though there are conflicting data and recommendations, the general recommendation for local care of mauve stinger jellyfish stings is first washing the area with seawater. As removing the attached nematocyst may cause increased envenomation, any adherent jellyfish parts should gently be removed with gloves or a tweezer after sea water washing.[8,9] They can also be scraped off with a seashell,[9] but scraping has been shown to potentially increase nematocyst discharge in some jellyfish species.[8] If gloves are not available, adherent tentacles may be removed with bare fingers, which may only cause relatively harmless prickling, due to the thick palmar skin, but this is not a first choice.[15,16] Icepacks can then be applied for 10-15 minutes with a cloth protecting the skin.[15] Topical lidocaine is recommended as an option in jellyfish stings by the Red Cross to reduce pain[9] and has been found in several mauve stinger studies to inactivate the nematocysts[11,12], so that can be one treatment option prior to removing the attached jellyfish parts. The maximal recommended lidocaine dose should not be exceeded to avoid toxicity.



**Mauve Stinger Jellyfish**

Over the counter medication can be used for pain and medical treatment possibly requiring hospitalization may be needed for more severe reactions. For all jellyfish stings, a tetanus booster is recommended if not up to date. Prophylactic antibiotics are typically not necessary. Antihistamines can be used for urticaria or allergic-type symptoms.[17]

There have been some studies using proprietary formulations to treat purple mauve stinger jellyfish stings, but one positive study was authored by manufacturer employees, unblinded and had no control group.[6] The other was an in vitro study which found

10% lidocaine and some compounds used in cosmetics also work as inhibitors of nematocyst discharge. It was thought that due to its viscous consistency one of the compounds, butylene glycol, wraps around the tentacle to act as a physical barrier.[11]



**Mauve Stinger Jellyfish**

## **Prevention**

Prevention of stings can be achieved by avoiding swimming in jellyfish infested waters, or use of a lycra whole body stinger suit.[1] A repellent cream of octyl methoxycinnamate and zinc oxide, sold commercially in some countries has been demonstrated to reduce the severity of jellyfish stings as well as providing sunburn protection.[1] Another commercial jellyfish sting inhibitor and sunblock, that contains octinoxate, titanium dioxide and multiple other ingredients has also been demonstrated to reduce sting severity from some species.[15,18,19]

## **Conclusions**

Mauve stinger jellyfish stings are painful but not life threatening. This year they were seen in increased numbers in New Jersey and New York State coastal waters. The literature, as is typical with jellyfish research, is sometimes contradictory. Avoidance of jellyfish when they are seen in the water is the best advice, but once stung, washing with seawater and gentle removal of attached parts of the jellyfish is recommended. Acid and alkali solutions have in some studies shown to worsen the venom discharge from nematocysts and are probably best avoided. Topical lidocaine may reduce pain and inactivate nematocysts. Other products that have been tested may have some benefit but the studies were either in vitro or were not of sufficient scientific quality.



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