

Confrontation with Scorpions as an Environmental Permanent Risk in Iran: A Review

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Background & Aims of the Study: Among the Iranians, scorpion is considered as one of the most important natural hazards and introduced as a dangerous animal. The outcome of this confrontation is to create stories and different beliefs about them. The primary aim of this study is to investigate and deliberate on the validity and fraudulence of these beliefs in how Iranian looked upon scorpions.

Materials & Methods: The study is a review of descriptive analysis. In other words, the study was conducted, considering the key terms such as: treatment of scorpion venom, motifs of humans and scorpions in internet and related websites; moreover, the study was carried on by professional journals, articles and researches as well as related published books in this filed. By considering the situation and its requirements, the references were chosen to be analyzed.

Results: Owing to the fact that scorpions have poisonous, painful and sometimes mortal venoms, they have attracted more attention compared to other creatures in the history and culture of Iran. Such creatures are regarded as the symbol of power and sentry in several references as they can be found in the works and studies remained from ancients throughout Iran.

Conclusions: Due to the medical importance of scorpions and Iranian's cultural beliefs, scorpion motifs has been regarded as a significant symbol of Iran's history. Moreover, in creating the scorpion motifs about the dangers of this creature, beliefs, the realities and the analysis of customs have been playing the great roles.

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Background

Scorpions are among those creatures who came into the existence since the ancient times and have been transmitted and evolved in the course of history. These ancient creatures residing on the earth were rarely able of emigrating and moving from one place to another place; furthermore, during the earth modifications, these creatures were less distributed on the

earth and rarely evolved. Such creatures have revealed to possess less diversity compared to their relatives namely insects and arachnids. Regardless of their long history, less external changes in the scorpions' morphology is evident (1,2). The greatest diversity of scorpion is to be found in dry and tropical areas, especially in those which are lying in latitudes lower than tropical. They can also be found residing in all hot areas of the world such as deserts. Scorpions were studied and explored

by human beings mainly, because of the owning poisonous and painful stings, venom capability of killing the human beings; also because of their unique morphology (3,4). Resulting from the abundance of these arthropods in hot and dry areas, the people residing in such areas and those which are lower than 40°N have paid more attention to the role of such creature in their life span compared to other people. These people have welcomed these creatures into their customs and beliefs. The number of scorpions are about 2000 described species around the world (5). This widespread presence and abundance of scorpions make them encounter human beings; however, this confrontation has not always been friendly which results in the creation of various fictions, tales as well as the numerous beliefs about them.

The tales and fictions, ethnical and national cultures, adoring and worshiping have been discussed divergently about the scorpions. Correspondingly, these arthropods have been playing an executive and possibly outstanding role in how people view the world, their thoughts and religious beliefs of various human societies in west and east of the world (6). In ancient societies such beliefs and thoughts were very common; nonetheless, at the present time, some of the traditional societies in some parts of the world still believe in such thoughts. The scorpions' venom and sting has been caused a great fear and panic among the human beings though it has seduced and fascinated a great number of individuals. However, these small creatures with a powerful killing venom has seduced, caused a great hatred among the human beings. In the past civilizations such as Iranian, these creatures in various symbols had played a significant role in their lives (7). Iran is among the countries which have been reported to have a great number of species especial the dangerous ones. In ancient Iran, the reports of scorpion stings have been witnessed in religious and historical texts which discloses the long history of this issue in Iran.

Accordingly, the problem of scorpion stings has been always prevalent in Iran due to the proper climate for inhabitancy of the scorpions (8-11). According to the census, an average of 42500 cases of scorpion stings as well as some cases of death have been reported in Iran annually. Though such census are incorrect and rudimentary; so the cases of scorpion stings have been estimated to be more. Based on studies, the scorpion stings have been reported from all over the country, but the province of Khuzestan is the first in terms of occurrences and related complication. (12-14). The scorpion stings occur throughout of the Iran; yet, its cases are higher in tropical areas. Except for Khuzestan which is always at the top, the location of some provinces are changed a bit in the annual statistics. Severity of envenoming depends on factors such as health status, age of victim, site of sting, scorpion species, size of scorpion and the degree of scorpion's stimulation (15-21). Owing to the close and extensive relationship of human beings with animals and plants, humans have distinguished a special role for each of them in choosing of symbols. The type of this relationship has been always determined based on and following the tribes, ethnics' insight and lifestyle; so human beings have always selected symbols opportune to their lifestyles in order to transfer their internal messages. When the man exceeded himself and his surrounding, he distinguished symbols for natural forces as well. Some of the instances of these symbols pertaining to the prehistoric era can be found on the caves and potteries as rituals, religious and artistic symbols. In Iranian art and culture the motifs of animals has a great place while the motif of scorpion due to its extensive and abundant contact with human beings in Iran continental shelf and its vital influence in health and hygiene has been favored and considered (6,22,23). By studying the scorpions and investigating their status in the works of prehistoric civilization, disclosing the similarities and differences among these motifs

and discovering the factors which had great shares in creating such motifs, it can be determined that the scorpion motifs have resulted from people's beliefs and the environmental conditions of areas in which these works were created; furthermore, they reveal the impacts of different Iranian civilization (24-26). This review of the study is focusing on documents, such papers and related resources for evaluation and interpretation of the role of these creatures. Its behavioral characteristics, treatment of stings as well as some of the superstitions surrounded the scorpion in past. In addition, the study reviews and delves into the impacts of the scorpion motifs in Iranian beliefs.

Aims of the study:

This review of the study is focusing on documents, such papers and related resources for evaluation and interpretation of the role of these creatures.

Materials & Methods

This study is a review of descriptive analysis. In other words, the study was conducted, considering the key terms such as: treatment of the scorpion venom, motifs of humans and scorpions in internet and related websites; moreover, the study was carried on by professional journals, articles and researches as well as related published books in this filed. Considering the situation and its requirements, the references were chosen to be analyzed. Then, some of the articles and references which encompassed more detailed and technical explanation and clarification about the scorpion sting and its treatment, scorpion motifs and those introducing techniques and methods for controlling and prevention of dangerous species of scorpions were delved into whereas the other unrelated articles and references were remained uninvolved in this study. Some of the uninvolved articles are those which study the other aspects of scorpions like the study of biochemical aspect of their venom. In the course of the study, those reference books

which have been published since 50 years ago, both within Iran and outside of the Iran, were also utilized. Eventually, after discussing the different aspects of previous works, the researchers' own point of view about the importance of this creature in shaping the thoughts and beliefs of Iranian in previous eras and the rightness and wrongness of the scorpion lives in the course of history were presented in this study. Among nearly 60 references, 33 references were selected based on the requirements, conditions which were analyzed, deliberated and criticized.

Results

Around 4000 years ago, the scorpion inclusion in humans' calendar as Scorpio and in a twelve signs of constellation series as zodiac signs was done by Chaldea astronomers. The scorpion symbolized Scorpio which was the eighth sign of zodiac. Among the sun signs and in the solar calendar from the October 24 to the November 22 which is in accordance with the month of Aban in Persian calendar. According to Greek myths, Orion who was the lover of Eos was stung by a scorpion and died. That might be the underlying reason that the constellation Scorpius was the image of a scorpion (1,27).

Scorpions have attracted a great degree of attention, owing to possess a painful sting, poisonous venom and sometimes fatal venom. Like other nations, Iranian also take these creatures into consideration. In a very long time ago, scorpion had a significant role in Iranian imaginations and their thoughts (7). Ancient Iranian in Espandarmazd day which is the fifth day of the month of Isfand hold women Eid (females' ceremony) which called as "Mojde giran" which means that they get good news in that day. In that special day, ancient Iranian, besides affording some gifts to women, held a ceremony for expulsion of the scorpion's venom (28,29). Among the Iranians, scorpion is considered one of the most important natural hazards and contaminants, so that it is always recommended to destroy their habitat and

killing them. These animals with a poisonous sting were caused fear and death. Scorpions can be hazardous to human. People at a risk of exposure to them include farmers, shepherds, foresters, children, housekeeper, gardeners, construction workers, laborers and other workers who spend time outside and inside in any environment (3,4). The health effects of the range from mild discomfort or pain to a lethal reaction for human allergic to the insect's venom. Anaphylactic shock is the body's severe allergic reaction to a sting and requires immediate emergency care. About 50 thousands of people are stung by scorpions each year, as many as 15–30 people in Iran die as a result of allergic reactions. This number may be underreported as deaths which may be diagnosed as other diseases mistakenly or attributed to other causes (9,12). Killing animals and vermin (destroying Kharfester) has been very common in ancient Iran and in that era such acts were highly rewarded while they were regarded among one of the major oblations. In Zoroastrian faith, killing scorpions and snakes due to their fatal venom were allowed. In those era, the atonement of ones sin was the destruction of noxious animals. Furthermore, the act of repelling and killing arthropods and insects were regarded and interpreted as destroying and ruining demon's holes (25,26). It has been asserted that those who brought more happiness are those who destroyed and ruined all demon's holes and killed all noxious animals. It can be determined that the impact and power of the animals and arthropods' venom was apparent to Iranians (28,29). Scorpions had also a great influence on the wars' outcomes. In the late Sassanid era, Kashan, Iran, was very prosperous and regarded as one of the most important cities. The people

of this city showed a great resistance against the armies of the Arab commander Abu Musa Ash'ari. When he was disappointed in conquering of Kashan, he sent jugs which were full of the scorpions into the city, after a while people became fed with these vermin and were surrendered. Arabs attacked this city, killed so many people, looted all people's properties and their livestock, captured and imprisoned women, girls and the combatants (30).

In distant past, some of the western tourists have written several materials about scorpions in their travelogues which seems to be influenced by the cultures of indigenous people. Sir Tomas Herbert (1626) described Kashan's scorpion in one of his travels. Herbert (1626) asserts that "scorpions are small snakes with long limbs. These creature sting through their tails. Some of the scorpions care capable of flying and some others stay away from mad individuals (7,9). The fear of toxic and noxious animals such as scorpion has been always the center of attention and by reviewing the available literature, it can be proved people's knowledge about these creatures has not been always true and sometimes this was mixed with superstitions. By looking at the pictures of scorpion in the history of medicine, it can be determined that the knowledge of doctors about the morphology of this creature was also incomplete. For instance, the number of segmentations in tail, legs and abdomen (mesosoma) was incorrect in these references (figure1) (31). In some of the literatures, it has been claimed that there are some scorpions whose tail(metasoma) has six segments. Scorpions' stings are very dangerous in August which cause death .There are some scorpions whose tail has less than 4 segmentations (23)



Figure 1) figure 1 illustrates the images of different scorpions along with a prescription for treatment of ear pain, eyes' weakness and Scabies by using and applying scorpion' ashes or boiled and grilled scorpion in Zeft resin(31).

In countries where scorpions inhabit, their images are usually carried by individuals to protect people against their stings. The image of these creatures were carved and engraved on the metal objects. Such great handmade pieces made of clay and silver which have been discovered from different parts of Iran (32). According to the legends, in Euphrates valley there was a dragon which was half scorpion and half human being, his upper part was human and the lower half was animal. In prehistoric period, alike this myth similar thoughts and ideas were common in different parts of Iran. The people of that era believed that the image of a harmful and noxious creature or animal has the power to keep that creature or animal away from human. This can shed light on the presence of scorpion symbol. Resulting from the presence of various species of scorpion in different parts of Iran, problems resulting from their stings, their motifs are prevalent all throughout Iran which belong to diverse historical period namely Jiroft, Kashan silk potteries, Timurid hill in Fars Province, Iranshahr in Sistan and Baluchestan Province, Shush in Khuzestan Province, Shahdad in Kerman Province and Hassan Pour, Iran

(33,34). These motifs play a significant role in identifying people's ideas and thoughts belonging to that era.

In each culture and civilization, depending on the individuals' knowledge of nature, people may have different opinions and outlooks toward animals and different creatures. Each creature may be symbolized socially and culturally. For instance, the symbolic meaning of the scorpion is different in dissimilar cultures. In different cultures it may symbolize different concepts like: fire, insult, marriage, humiliation, suffering, betrayal, death, torture, lust, pain, insidious, the new birth and the sign of hangman (6). The Mayan name of scorpion is the symbol of god of death. In Buddhism, the scorpion sting was regarded as the reason of invincibility. The scorpion sting has been entitled as the blade wisdom and knowledge. Moreover, scorpions are considered as the sign of ultimate demise and final fall of human being. In addition, scorpions are usually interpreted as a major damage in dream interpretation (28,7).

In past common people believed in myths that some people still believe in them now. Believing in myth can be observed among the people in some parts of Iran now. People

residing in Abualabas village in Baghmalek city which is located in Khuzestan Province of Iran believe that the scorpions were catastrophic animals which were sent because of people's oppression to a faithful person (prophet) by God. People of this village believe that in ancient times there was a God-fearing person who led people to honesty and truthfulness. Because of his instructions, he was oppressed by people until he was forced to ask God to punish these people. Consequently, God sent three disasters upon them all together and simultaneously which killed all of them. Just a girl and a boy took shelter under a cow's abdomen and survived. The people in that region now believe that today's generation of Abualabas village are the children of that survivors (9,32). Some parts of the common scorpion myths among people discuss scorpion's biological characteristics, how they penetrate people's home and the way they sting people. Such myth may also be consistent and be in accordance with reality.

It has been stated in Algerian legends that there was a king who built a palace for his son. Astronomers have predicted that his son would get stung by and scorpion to death. Hence, the palace were built of flat stones which were impenetrable, the palace surrounding were also made of polished and even marbles. When a basket of grapes was brought to Prince, whereas a scorpion was hiding in the basket. When the prince took the grape from the basket, he got stung by the scorpion to death. This legend in a way disclose how human being was stung by scorpion and indicates that scorpions cannot climb smooth and flat surfaces (28). In recent years, similar cases to this legend occurred in Khuzestan Province of Iran in which people were get stung by scorpions while they were hiding within vegetable baskets. A vegetable basket was sent from Ramhormoz, Iran, to a family. The mother of that family got stung by a scorpion while cleaning the the vegetables. Unfortunately, medical aids and the treatment could not save her life and after a few days she

passed away because of the scorpion sting. This story and similar cases illustrate that the legends and myth about the scorpion have roots in reality (9,32). Curing and treatment of the scorpion stings are likewise to similar legend and myth. In one of these legends has been claimed that, providing a scorpion, get it surrounds with fire, it will commit suicide with its own sting (22). Scorpions are known in our country because of their stings; therefore, preventing such creature stings and its treatment has been always highly considered. Correspondingly in the resources of traditional medicine, the way for banishing scorpions, abolishing them and treating their stings have been discussed in detail. Though sometimes these legends are mixed with superstitions. For instance, for banishing scorpions has been asserted that if a person is hot tempered who is also fasting spit on a scorpion, the scorpion will die at once. Or if you burn a scorpion, the smoke of death scorpion at their holes will kill the other scorpion (23).

Discussion

Scorpions and their stings have been regarded as a major problem from distant past; hence, this issue has had a special place in the history of medicine and Iranian culture. There are various articles and documents written around scorpions. The presence of such thoughts and ideas about scorpion among Iranian and in cultures of other nations is very common. Owing to the fact that these creatures had a widespread presence throughout Iran and make scorpions encounter human beings, a variety of articles have been written about scorpion stings, their morphology and their diverse symbols in dissimilar beliefs. Scorpion's motif was regarded as a very significant symbol in prehistoric civilizations of Iran due to its fatal and painful sting. By considering and scrutinizing the other side of these works, it can be claimed that dangers of scorpion, the beliefs, the realities, and analyzing customs had played

significant role in forming the role of this creature which was occasionally realistic (6). In some of the references, some of materials which keeps scorpions away or kill them were pointed out (23). doubtless, some of these materials are useful for keeping the scorpions away for example burning the recommended materials and the smoke from them can be used for keeping scorpions away. Even nowadays, people in some villages still use the smoke arisen from the burning materials for banishing Arthropods (22). It has been asserted in some of the references that they flying scorpion is bigger than the normal scorpion. This kind of scorpions fly from one area to another one, using their wings. With their wings, scorpions can continue their journey safely and they will not fall (23). There is no flying scorpions now. Based on the available reference, none of the scorpions were winged from the beginning. Nonetheless, in some of the old references, the presence of the winged scorpions were emphasized and still in some area like Kashan, Iran, where is occupied by a large portion of scorpions, the presence of flying scorpion is noted (7,27,28,32). In desert regions of Kashan neighborhood and among the sand dunes *Androctonus crassicauda* scorpion can be seen, moving especially when the wind is blowing heavily and it is stormy. Because of having a rigid external skeleton, such scorpions can move among sand dunes without being injured. They can be moved easily from one place to another place since during storm a large volume of sand are displaced. The wind and storm direction may be toward the human habitations. This is partly line with local people's opinion in some parts of the country who believe that at the time of heavy wind and storm, scorpions are more abundant. Normally, during the day, these arthropods stay under a layer of sand with a depth of around 10cm or more in order be saved against the arduous hot weather of desert and avoid the heat. The displacement of scorpions with more hair on their body is done easier by wind. Local people

usually take this displacement as the flight of scorpions (22). In some other references, there are some information about the segments in scorpions' tails. It has been said that some scorpions' tails have six segmentations, they become very dangerous after fifteenth of August moth and if they sting a person, the person cannot survive. There are also some scorpions whose tail has less than six segments (23,31). The first part about the scorpion's tail is true. In morphology of scorpions it has been asserted that the metosoma (tail) has five segments plus the distal (end) telson (stinger). The old reports about scorpion tails in the first part and their dangerous stings in August month is a fact; however, it is not true about the scorpions with lesser segments in their tails (7,22). Regarding scorpions' behaviors has also been stories similar to legends and myth. In one of them, it is claimed that providing a scorpion, get it surrounds with fire, it will commit suicide with it's own sting (32). Such thoughts and beliefs about scorpions are not only present in the cultures of other nations but also it exists among Iranian and regard them as the scorpions' characteristics. Some of the remarks from normal people and scientist result from the fact the following statement. When a scorpion is surrounded by fire, tries to defend by it's stinger, because the stinger is only usable instrument. It repeatedly attacks the fire which is burning it's body and in order to defend itself, it stung different part of it's own body until it is alive. Before dying because of it's venom, the organic compounds and proteins of it's body becomes denatured; coagulated and it dies. Committing suicide in a way observed among human has not been reported among creatures like scorpions (35-37). Providing that a part of our body, adults, get stung or our blood sucked by a mosquito, we immediately pound they place being stung while the mosquito my still be there. Man does not commit suicide or beat themselves, here we are dealing with a defensive reaction from human beings similar to the defensive response of scorpion to the

treat (22,32). All of these reports suggest that scorpion sting has a long history in our country and has been highly considered by Iranian. The problems pertaining to scorpion stings were mostly prevalent to south-western part of Iran particularly Khuzestan and the death resulting from the scorpion sting is witnessed to be more than other parts of the country. Correspondingly, due to the cultural backups, the role and the importance of the scorpion venom, more attention should be paid to the matters of preventing from the scorpion sting and his venom (38-41).

Conclusion

Scorpion sting and its venom has been regarded as one of the major medical and problems with a long history in Iran. Scorpion's motif was regarded as a very significant symbol in prehistoric civilizations of Iran due to its fatal and painful sting. By considering and scrutinizing the other side of these works, it can be claimed that dangers of the scorpion, beliefs, realities and analyzing customs had played a significant role to form this creature which was realistic occasionally and in some cases they were mixed with superstitious. This motif was perceived as an image of human and scorpion. These images on clays and stone plates and potteries were symbol of warriors and guardians whose magical power is agreed to repel harmful and noxious animals. This suggests that mythical figures and religious beliefs play a significant role in private and social life of people. In order to deal with the philosophical problems such as the creation of man, good and evil, death and life, resurrection and the life after death, people of these areas have created superhuman beings in their mind in order to find the answers to their unknowns. It is important for health authorities to train the staff and people about their risk of exposure to scorpions, how they can prevent and protect themselves from stings and what they should do if they are stung by the scorpion.

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