

Biblical descriptions of spinal neurological and neurosurgical pathology

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Abstract: The Holy Bible includes descriptions of the spine with both neurosurgical and neurological implications and most spinal disorders presented have been briefly described and display a mystical nature. The Holy Bible is a book full of sacred precepts and not a medical encyclopedia as it was written in the context of that age, and in a language that had to be understood by people of that era. This paper aims to give a short presentation of several diseases of the spine mentioned in the Holy Scripture in order to identify the most common disease among the Jews during biblical times and attempts to provide their diagnosis.

Key words: spine diseases, religion, history of medicine, neuroscience

Introduction

The Holy Bible or the Holy Scripture contains only short descriptions of spinal disorders as medical knowledge was scarce and limited at the time when Sacred Books were written. Even though there have been existed medical schools since the 15th century BC, Israelites ancestors did not have a proper medical education during biblical times (11), the priest playing also the role of the physician. The priests practiced medicine by applying the precepts of Leviticus which was not only a true moral code, but also a preventive medicine and public health treaty. They had knowledge about the contagiousness of most diseases (especially leprosy), knowing how to recognize and isolate them. Due to this “health legislation”, Israel was a fairly healthy land

compared to neighboring countries (11).

This paper aims to identify the spinal disorders described briefly in the Holy Scripture in order to identify the most common diseases among the Israelites during biblical times.

Spine trauma

The First Book of the Kings in The Old Testament presents a spine injury that caused immediate death: “When he mentioned the ark of God, Eli fell backward from his chair beside the gate, and his neck was broken and he died, for the man was old and heavy.” (First Book of Kings, 4, 17) (22). Since death occurred instantly after cervical spine trauma, we can suspect an odontoid fracture caused by hyperreflexia in the elderly as Eli was 98 years

old. In the elderly, even a minor trauma of the cervical spine (including a fall from the same level) can produce a fatal odontoid fracture at the moment of impact (1, 17).

Eli had been a judge of Israel for 40 years and high priest in Shiloh, one of the largest religious centers of Hebrew Antiquity (10) and died when Philistines had stolen the Holy Ark and had killed hundreds of Israelites among which were his two brothers, Hophni and Phinehas (15).

Another episode about a spinal cord injury could be identified in The New Testament. Without providing details, the evangelists Matthew, Mark and Luke described a full cross section of cervical spinal cord, namely the beheading of St. John the Baptist (Figure 1) ordered by king Herod: „And immediately the king sent an executioner, and commanded his head to be brought: and he went and beheaded him in the prison, and brought his head in a charger, and gave it to the young lady: and the young lady gave it to her mother.” (Mark, 6, 27-28) (22, 23).



Figure 1 - Salome with the Head of Saint John the Baptist (c.1507-09), Andrea Solario Metropolitan Museum of Art, New York, USA), public domain

Degenerative spine pathology

The Third Books of Kings tells about King Asa, the third king of the Kingdom of Judah, about which we are told that at the end of life he had a disease of the lower limbs, perhaps due to a spinal cord injury: “All other acts of Asa, and all his might, and all that he did and the cities which he built, are written in the chronicles of the kings of Judah, except that in his old age he was diseased in his feet. Then he slept with his fathers and was buried together with his fathers in the city of David, his ancestor.” (Third Book of Kings, 15, 23-24) (22). The Second Book of Paralipomena mentions again „in the thirty-ninth year of his reign Asa became diseased in his feet. His disease was severe, yet even in his disease he did not seek the Lord, but the physicians” (The Second Book of Paralipomena, 16, 12-13) (22).

In both sources, King Asa's disease is just mentioned without any details, but based on the claim that it broke at „old age”, „in the thirty-ninth year of his reign”, when the patient could have been aged 60, we cannot exclude a degenerative spinal pathology (for example, a lumbar stenosis), that could have caused walking disorders or a neoplastic spinal pathology with a progressive setting of an incomplete motor deficit (18). Falk (1996) believes that it is a paralysis of the lower limbs (9), but we may take into consideration the existence of a polyradiculoneuritis. It is interesting, however, that King Asa was the first patient who saw a physician and was not a supporter of the idea that a disease is just a sin for which you have to suffer.

Infectious pathology of the spine

Distress related to spinal kyphosis (“the hunchback”) refers mainly to Pott's disease, which is the spinal location of tuberculosis, about which Hebrew priests had knowledge that it was contagious (3). Thus, among the main diseases that did not allow a person to become a priest, which are listed in the Third Book of Moses of the Leviticus in the Old Testament, included “the hunchback”: “None of your descendants who has a defect may approach to offer gifts to God. For no one who has a blemish shall draw near, a man blind or lame, or one who has a mutilated face or a limb too long, or a man who has a broken foot or broken hand, or a hunchback or a dwarf, or one who has a defect in his eye or eczema or scabs or crushed testicles (Leviticus, 21, 17-20) (22).

The Gospels of Matthew, Mark and Luke mentioned another condition of the spinal cord: “Many gathered together so that there was no longer room for them(...), And they came, bringing to him a paralytic carried by four men. They lowered the stretcher on which the paralytic was lying. And Jesus seeing their faith said to the paralytic, „Son, your sins are forgiven!”(Mark, 2, 2-5) (22) and this, „taking his bed, and went forth before all, that they were all pleased and glorified God, saying, These things I have ever seen.”(Mark, 2, 12) (22).

We have few information about his disease: it could have been a tumor or fracture of the spine with paraplegia. Jesus Christ addressed to the sufferer with the appellation of „son” to refer to someone who was probably of a young age. This makes us to believe that the disease was a pathology specific to young people,

maybe a birth trauma (3), or a myelitis lesion type (11). Spinal disease and its consequent paraplegia were considered a consequence of certain facts far from moral code of the time as Savior first tells him: “your sins are forgiven!” and He healed him and the former paralytic man began to walk. As it was a disease of the spine believed to be the consequence of a „sin”, we could suspect a lesion of neurosyphilis: syphilitic myelitis (6), Erb paraplegia (21) or tabes dorsalis.

We meet in the Gospel of Luke another case of spine pathology that is much discussed in the literature. Luke, being a physician, provides the best medical descriptions in this Holy book: „And behold, a woman who had a spirit of infirmity for eighteen years, and which was bowed together, for she could not stand up at all. When Jesus saw her, He called her and said to her, Woman, thou art loosed from thine infirmity. And He laid His hands on her, and she immediately went and glorified God.”(Luke, 13, 11-13) (22) (Figure 2).



Figure 2 - The Woman who had an Infirmity (c.1886-1896) James Tissot (Brooklyn Museum, New York, USA), public domain

As the Gospel says that she had a long-term suffering (18 years), we deduce that this spinal disorder was a chronic one. The main diseases causing spinal kyphosis are chronic infectious diseases (tuberculosis of the spine, or ankylosing spondylitis), and degenerative (spondylosis, spine fractures, or osteoporosis of the spine). In this case, the main differential diagnoses can be made with: multiple osteoporotic spine fractures, spinal tuberculosis and ankylosing spondylitis.

In general, infectious pathology of the spine affects young people and the degenerative one the elderly. In the case of „bent woman”, considering that her kyphotic condition had a history of over 18 years, we may suspect that the disease may have occurred as a result of spine fractures, possibly because of osteoporosis, especially that even today, in Israel, the incidence of osteoporosis is over of 7% in men and 25% in women, being a public health problem (24). Although the prevalence of osteoporosis in Jewish women during Biblical times is not known, ethnic considerations, genetic determinants and external factors make us believe that in ancient Palestine, the incidence of osteoporosis in Palestinian women was much higher. However, in ancient times, the Jews, like all other peoples, lacked vitamins and minerals in their diet so they were vulnerable both to epidemic infectious diseases, as well as to endemic parasitic diseases as there are many Biblical references to this pathology (14). Moreover, the present rate of osteoporosis is almost two times higher in women in Asian countries, than in the European countries or United States of

America (13).

On the other hand, considering that in ancient Israel life expectancy of men was of about 40 years(12), and of women in poor rural areas of 30-40 years (7, 8),we could suspect that woman’s kyphosis was rather caused by ankylosing spondylitis or spinal tuberculosis, because the disease began when she was in her youth. Spine tuberculosis existed in ancient Near East as the most evidence has come from Egyptian mummies (5), but it is however unlikely that the bent women could have spinal tuberculosis as she had a long-termkyphosis of the spine (for 18 years). If she have had spinal tuberculosis, the woman would have died soon and could not have lived for so many years. We consider that it is most likely that the woman's disease was an ankylosing spondylitis kyphosis as the patients develop a progressive kyphotic severe deformity of the spine and have a life expectancy similar to that of the general population, except severe cases (2, 19).

Paraparesis

Gospel of John talks about a paraplegic man who was healed by Jesus (Figure 3), “now there is in Jerusalem, at the sheep market, a pool, which is called in the Hebrew language Bethesda, having five porches. In these place, a great number of invalid people, blind, halt, or withered, waited for the moving of the water. For an angel of the Lord went down at appointed seasons into the pool and moved and stirred up the water; after the stirring up of the water, who then first stepped in the water was cured of whatever disease he was afflicted. There had been an invalid for thirty-

eight years. When Jesus saw him lying there and founding out that he had been in this condition for a long time, he asked him: Do you want to get well? The invalid replied: I have no one to help me to get into the pool when the water is stirred. While I am trying to get in, someone else goes down ahead of me. Jesus said unto him: Rise, take up thy bed, and walk.” (John, 5, 2-9) (20, 22). Having only this scarce description, we conclude that the patient from Bethesda could suffer from progressive muscular atrophy, most likely an amyotrophic lateral sclerosis (3) and not from a complete neurological deficit as the man could move on crutches.

Brachial monoplegia

Neuromuscular pathology of upper limb is another pathology found in the Bible: “On another Sabbath, he entered the synagogue and was teaching, and a man was there whose right hand was withered. And the scribes and the Pharisees watched him, to see whether He would heal the man in the Sabbath, so that they might find a reason to accuse him. But He knew their thoughts, and He said to the man with the withered hand: Come and stand here. And he rose and stood there (...). And after looking around at them all He said to him: Stretch out your hand. And he did so, and his hand was restored” (Luke, 6, 6-11) (22). We cannot say exactly what kind of disease have this man, but can surmise a paralytic form of polio (anterior poliomyelitis), an atrophic paralysis caused by a shoulder plexopathy (4) or even a cervical spine pathology.



Figure 3 - Christ Healing the Paralytic at the Pool of Bethesda (c.1667), Bartolome Esteban Murillo (The National Gallery, London, UK), public domain

Conclusions

Most spinal conditions presented in the Bible have been briefly described and display a mystical nature. So, an exact diagnosis could be made with difficulty. The Bible is a book full of sacred precepts and not a medical encyclopedia as it was written in the context of that age, and in a language that had to be understood by people of that era. Spinal diseases are rarely mentioned because two thousand years ago the rate of survival of patients with spine injuries or other spine conditions was very low. Only those with incomplete lesions caused by syphilis, spina bifida, leprosy, spinal tuberculosis or other spinal infectious diseases survived (16). But, a careful reading of the brief details may suggest the spinal disorders that affected the Israelites in biblical times, such as trauma, degenerative diseases, bone infections, spinal neuromuscular diseases and even tumors.

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