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A brief analysis of the ancient roman medical system

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Abstract

The Ancient Roman civilization was one of the prestigious and developed civilizations. It was enriched with setup of medical knowledge and treatment. Their knowledge and contribution of medical science mostly came from Egyptian and Greek civilization. The establishment of the hospitals valetudinarium was the first established treatment center in the world for injured slaves and soldiers. Roman medical instruments, diet & medicine and hospital establishment information found in several books and journals. Most of the prominent physician came from Greek e.g. Galen, Dioscorides etc. In this review article, a brief historical discussion have been analyzed on treatment procedure, contribution of physicians, list of medicine and diet, hospital management of Roman civilization.

Keywords: Roman civilization, medical science, valetudinarium hospital, instruments, galen, dioscorides

Introduction

The Ancient Mediterranean was an interconnected world with trading of material goods, ideas and beliefs. Medicine flourished through these connections and was consequently transferred among peoples and eras. The Romans obtained much of their medicine from the Greeks, who were influenced by the Egyptians and their pharmacology^[1]. Roman medicine was highly influenced by the Greek medical tradition. The incorporation of Greek medicine into Roman society allowed Rome to transform into a monumental city by 100 BCE^[2].

Greek physicians, Roman physicians relied on naturalistic observations rather than on spiritual rituals; but that does not imply an absence of spiritual belief. Tragic famines and plagues were often attributed to divine punishment; and appeasement of the gods through rituals was believed to alleviate such events. Miasma was perceived to be the root cause of many diseases, whether caused by famine, wars, or plague. The concept of contagion was formulated, resulting in practices of quarantine and improved sanitation^[3].

The early days of the city, Roman medicine consisted of little more than propitiating the gods and reliance on traditional folk remedies. This marked the beginning of Greek influence on Roman medicine; eventually, healing came to be almost entirely in Greek hands and remained so for centuries. Asclepiades of Bithvnia, a man of great natural shrewdness, was the first Greek doctor to succeed in Rome, in the 1st century BC. He avoided preaching Greek theories and rejected many of the extreme treatments prevalent in Rome, his motto being 'cito tuto jucunde' ('swiftly, safely, and sweetly'). This moderate approach — and, possibly, his habit of prescribing wine in liberal doses — smoothed the acceptance of other Greek doctors. The Greeks established schools of medicine in Rome, all influenced by the Hippocratic Corpus. There were three main groups: the dogmatists, who were keen to understand disease and approved of dissection, but most of whose medicine was theoretical; the empiricists, who relied on experience and observation to discover effective remedies; and the Methodists, who believed that doctors should follow only a few simple rules, which could be learned in about six months thus rejecting at a stroke both complicated theories and long experience^[4].

Ancient Roman medicine was a combination of physical techniques using various tools, and holistic medicine using rituals and a religious belief system. Early Roman medicine was a mixture of religion and witchcraft, but it eventually became more influenced by the Greek medical sciences^[5].

The Instruments

Forceps: This instrument has many functions and basically acts as an extension of the fingers. It could have been used for personal hygiene and depilation.

A variety of forceps have been found in the archaeological record. Most of the simple tweezers were made of a single strip of metal bent in the middle with straight edges or slightly turned-in edges, some of them are cast with finial decorations. Those with smooth jaws were recommended for epilation in granular conjunctivitis [6, 7]. They could also be used in the removal of bone splinters [8].

Cupping Vessels

These instruments were used for both wet and dry cupping. For wet cupping a knife was used to make a small incision in the skin and then the vessel was placed over it, drawing out the tainted blood or infected matter. Dry cupping was used in the release of bad humours, and was suggested for headache and painful joints [8].

Dental forceps are designed more specifically for the task of tooth removal. They have powerful jaws sometimes with an indentation for the tooth, so the tooth would not be crushed during removal, which would have caused greater problems. To create a stronger hold on the tooth the arms of the dental forceps were crossed in the centre and attached with a bolt [8].

Gynaecological and Gender-specific instruments

Some instruments were specifically designed for the male and female bodies. The catheter, discussed under syringes and tubes, was designed specifically for each sex. Soranus mentioned a number of implements developed specifically for gynaecological treatments and childbirth: vaginal specula, uterine dilator, decapitating knife and a foetal hook, to name a few. These instruments, however, could be used to treat both the male and female bodies, as seen with the rectal speculum [9, 10].

Hooks

These were used for seizing and holding tissue, boils and tonsils [7]. The two most common hooks were sharp and blunt forms. The sharp hooks (hamulus acutus, uncus, alqkistrion) were made of a copper-alloy and used to hold open the margins of a wound, giving the surgeon room to operate [7, 8].

Needles

Needles are important in a number of surgical procedures. There are two types known of through the literature, those with eyes used for suturing wounds and lacerations and for sewing bandages and those with cylindrical handles that are made of copper-alloy with a hole in one end for a steel needle. It is too difficult to make an identification of suturing needles as they would appear like common sewing needles, although in good condition they would need a cutting edge [8, 10].

Ear Probe

These instruments are generally called ligulae. However, given the Latin name, ear probe is also correct. There are two types those with flat ends and those with small round spoon-scoped ends [7, 8, 11].

Spatula probe

The instrument consists of a long thin handle and tends to range in size from roughly 6 to 15 centimeters with a spatula on one end of its handle and an olivary probe on its other end, indicating its multifunctionality. The spatula is usually

leaf-shaped and tends to be flat on one side and slightly rounded on the other. Sometimes the spatula could be used as a cautery, as Soranus mentions using it on the umbilical cord. It could also be used as a tongue depressor and as a blunt dissector [7].

Surgical Knives

Along with scalpels these are mentioned frequently through the medical literature, but very few survive in the archaeological record. One knife that has been identified is the lithotomy knife, a form with a hook on one end and a sharp knife on the other [8]. Nonetheless, Celsus states that a scalpel could also be used for removing a stone [12].

Catheters are also found and are important for helping aid urination when the bladder was blocked by a calculus. The catheters were designed for both the male and the female body, thereby making them gender specific instruments. The males' were more "S" shaped and long whilst the females' were shorter and straighter [8].

Ointment Pallet

Although this is not a surgical instrument, it does have associations with pharmaceutical procedures and is found frequently in the archaeological record. The pallets are made of stone and often found worn down on one side, due to the grinding of medicines that it was used for [7].

Hospitals

The Roman medical system saw the establishment of the first hospitals; these were reserved for slaves and soldiers. Physicians were assigned to follow armies or ships, tending to the injured. Medical care for the poor was almost non-existent, so the poor had to resort to spiritual aid [13].

The earliest known Roman hospitals of the Roman Empire were built in the 1st and 2nd centuries AD, in the reign of the emperor Trajan. The army's expansion beyond the Italian Peninsula meant that the wounded could no longer be cared for in private homes. For this reason the *valetudinarium* was established [14].

In spite of the fact that many people use the identification of hospital buildings to support their interpretations of medical care being uniform in the Roman army [15, 16, 17]. The general layout of the structures identified were similar to one another; however even these vary from one fortification to another in terms of their size and the detail of their plan. Generally, the structures are based on a rectangular plan constructed around a central courtyard [17, 18].

The structures are based on a rectangular plan constructed around a central courtyard. The buildings in legionary fortresses had a courtyard that was surrounded on three sides by an inner row of small rooms, or 'wards'. The inner ring of rooms faced onto a hallway that was surrounded on three sides by an outer ring of wards. Each ward consisted of two rooms divided by a small hall, each of the two rooms opened onto the small hall, rather than onto the larger central hall. The rectangular plan described is more commonly found in the legionary fortresses; smaller versions of the rectangular plan surrounding a courtyard are seen in some auxiliary forts [8, 18].

Diet & Medicines

The diet of an average Roman consisted of cereals, olives, wine, as well as fruits and legumes like chickpeas and lentils. Fish was a luxury and rarely eaten, and the primary

source of meat came from pigs. Cereals in the forms of bread and the porridge were a staple of a Roman's diet, as the monthly state distribution of free grain to the urban poor attests. The poor, mothers and young children were probably undernourished and, because the babies of well-to-do mothers were normally given to wet-nurses and, hence, denied colostrums, they were particularly venerable [19, 20].

Roman physicians were strongly influenced by what the Greeks used to do, and would carry out a thorough physical exam of the patient. Many of their treatments were also influenced by Greek practices. Roman diagnosis and treatment of patients consisted of a combination of Greek medicine and some local practices. They did have a wide range of herbal medicines and other remedies [21].

- Fennel - was widely used for people with nervous disorders. Romans believed fennel calmed the nerves.
- Unwashed wool - was used for sores
- Elecampane (horse heal) - was given to patients with digestive problems.
- Egg yolk - was given to patients with dysentery
- Sage - said to have had more religious value, and used by those who still believed that the gods could heal them.
- Garlic - doctors said garlic was good for the heart
- Boiled liver - was administered to patients with sore eyes
- Fenugreek - often administered to patients with lung diseases, especially pneumonia
- Silphium - was used as a form of contraceptive, as well as for fever, cough, indigestion, sore throat, aches and pains, warts. Nobody is sure what Silphium was; historians believe it is an extinct plant of the genus *Ferula*, possibly a variety of giant fennel.
- Willow - used as an antiseptic

Roman doctors

Roman medicine was highly influenced by the Greek medical tradition. The incorporation of Greek medicine into Roman society allowed Rome to transform into a monumental city by 100 BCE [22].

Galen

Galen was born in AD 129 at Pergamum, a great cultural centre in Asia, the richest province of the Roman Empire. Certainly by AD 162, when he travelled to Rome, he was already famed as a philosopher-physician [23]. Galen contributed a substantial amount to the Hippocratic understanding of pathology. Under Hippocrates' bodily humors theory, differences in human moods come as a consequence of imbalances in one of the four bodily fluids: blood, yellow bile, black bile, and phlegm. Galen promoted this theory and the typology of human temperaments [24].

Galen regarded anatomy as the foundation of medical knowledge and he frequently dissected and experimented on such lower animals as the Barbary ape (or African monkey), pigs, sheep, and goats. He distinguished seven pairs of cranial nerves, described the valves of the heart and observed the structural differences between arteries and veins [25]. Galen was a brilliant anatomist and pioneer of experimental physiology. He was both a universal genius and a prolific writer. He pioneered the concepts of anatomy, physiology and therapeutics. He is credited as being the first to discover that arteries carry blood, not air, as was previously believed. He developed medical tools for surgery

and dissection and wrote many volumes of his discoveries and observations [26, 27].

Pedanius Dioscorides

Pedanius Dioscorides (Pedianos Dioskorides; c. 40 – 90 AD) was a Greek physician, pharmacologist, botanist, and author of *De Materia Medica* (Ancient Greek: On Medical Material) - a 5-volume Greek encyclopedia about herbal medicine and related medicinal substances (a pharmacopeia), that was widely read for more than 1,500 years. He was employed as a medic in the Roman army [28].

Dioscorides of Anazarbus was a Greek physician born in southeast Asia Minor in the Roman Empire in the first few decades C.E. During his lifetime, Dioscorides traveled extensively seeking medicinal substances from all over the Roman and Greek world. He benefited greatly from the ease of travel across wide stretches of territory under the control of the Roman Empire at the height of its growth [29].

Dioscorides' travels as a surgeon with the armies of the Roman emperor Nero provided him an opportunity to study the features, distribution, and medicinal properties of many plants and minerals. Excellent descriptions of nearly 600 plants, including cannabis, colchicum, water hemlock, and peppermint, are contained in *De materia medica*. Written in five books around the year 77, this work deals with approximately 1,000 simple drugs [30].

Soranus

Soranus was a Greek physician, born in Ephesus, who lived during the reigns of Trajan and Hadrian (98–138 CE). According to the *Suda*, he practiced in Alexandria and subsequently in Rome [31].

Asclepiades

Asclepiades studied to be a physician in Alexandria and practiced medicine in Asia Minor as well as Greece before he moved to Rome in the 1st century BCE. His knowledge of medicine allowed him to flourish as a physician. Asclepiades was a leading physician in Rome and was a close friend of Cicero. Asclepiades strongly believed in hot and cold baths as a remedy for illness; his techniques purposely did not inflict severe pain upon the patient. His other remedies included: listening to music to induce sedation, and consuming wine to cure headache and to cure a fever. Asclepiades is the first documented physician in Rome to use massage therapy [32].

Arcagathus

The first recorded doctor (medicus) to come to Rome was Arcagathus, who arrived from the Greek Peloponnese in 219 BC. He was an expert wound surgeon. Over 100 years lapsed before another Greek physician, Asclepiades of Bithynia (around 100 BC), had taken up residence in Rome. The Romans inherited some ideas of anatomy and medicine from their Etruscan ancestors and adapted them to the practice of the official state religion, especially in the practice of hepatoscopy or reading the divine signals in animal livers [33].

Conclusions

Roman medical systems were developed by the help of Greek contribution along with their own knowledge. The establishment of hospital was one of the historical incidences in the history of civilization. Though treatment

facilities were limited and it was for Emperor and Roman army but their medical system was so much so rich that a lot of knowledge and ideas come from Roman civilization to present modern medical system.

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