THE HISTORY OF MILITARY PHARMACY, THROUGHOUT THE MIDDLE AGES, IN A METHODOLOGICAL THEORY.
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The introducing of gunpowder in the 15th Century caused a radical change in warfare throughout the whole of Europe. The enemy was seriously injured, by the gunpowder, form both long and short range. This was a completely different approach in paralyzing the opponent, as the laceration of skin and body took place. Through this a sustainable change of character of wounding, was induced. The injuries showed signs of burns and internal contamination to the body tissue due to the penetration of poisonous gunpowder.

Theories of internal poisoning through the gunpowder were constipated. The usual methods of treatment did not show better results in the tending to the injuries of the new nature of gunshot wounds. The problem of differentiating depended on the ailment. Those on the skins surface which were to be seen with the naked eye and the internal poisoning which took place within the body.

Two different therapeutic compounds were applied and it was obvious that they must be in association with and in harmony with the two different internal and external methods. Unfortunately, in practice, these methods have not been proven to be successful. The field surgeons and field pharmacists decided that these old traditional practices should be left behind, as it was their priority to help the wounded knights.

Following on from this, there was a change in paradigm regarding the handling of gunshot powder wounds. The author of this article elaborates this change of paradigm based on methodological instrumentation in the
study of history. The methodological analyses of new treatment to gunshot powder wounds showed us the way to more effective therapies to wounds of this nature. This all took place, which means that these new therapies were induced, although the old Hippocrates therapies were compulsory. Through the face to face fighting, battles in the 15th Century, and previous to the introducing of gunpowder, mainly mechanical injuries were induced to the opponent. There are a variety of descriptions regarding these wounds applied to the area of the face and cranium. These wounds were dressed by barber- and Arabic surgeons. (1) “I used my sword to cut his skull (cranium) in two halves, so that his eyelids were turned inside out. In this instant the treatment was sufficient enough… “Fill the wound with a grainy powder and wrap around the head with a turban.” (2) In a certain sense one can describe the whole as a minimal surgical intervention which lead to reconstruction of the injured eye and eye socket tissue (orbitum). In another case where there was injury through a spear, where the eyelid was lacerated. “The eyelid fell off but was still attached through a shred of skin at the corner of the eye. The eye moved without any support from the eyelid. The surgeon had to stitch up the eyelid in order to enable recovery.”

In both different cases of injury to the eyes belonging to two different knights, a barber surgeon and a field surgeon operated at two different moments in time, but they treated using the same curative paradigm.
This paradigm included conservative treatment and similar surgical scalpel intervention for the reconstructing of the eye and eye tissue. The level of knowledge and the manual skills from both represented barbers and field surgeons were congenial. Otherwise expressed they treated the typical injuries to the eye and eye tissue applying similar methods. They performed within the same paradigm, following the same anatomical and topographical relations and principles to guarding well attained organic tissue and prevented primary and secondary infection.

In comparison of both procedures of amputation of the lower limb, between the Arabic and European surgical barbers, it was revealed in which manner both paradigms conflicted with each other. A characteristic of the Arabic barber’s surgical intervention was to avoid additional traumatic procedures, throughout the course of amputation. This was taken from the traditional ancient era. In the ancient era it was preferred to gently handle the organs and bodily tissue, as a paradigm. “On the lower limb of the Arabic knight a tumorous like swelling occurred and the toes were festered with pus and were beginning to decay. This resulted in an extremely unpleasant smell. The barber surgeon decided to saw the leg off from halfway down the shin. The Arabic barbers treated the leg, lege artis, so that the shin could heal. The Arabic knight was able to take part in many further battles.
With the surgeons of the crusaders it was evident that the paradigm of the ancient era, as mentioned above, did not come to light. They did not apply analgesics, which lead to trauma whilst undergoing amputation (3). The Frankish surgeon placed the patient’s leg on the tree trunk and said to the crusader: I will chop off your leg with an axe, in a single blow. The crusader aimed a blow to the leg and I observed this. But he did not manage to cut off the leg properly. He then aimed the second blow in such a way, that the bone marrow spurted out of his leg and the patient died instantly.

The introduction of gunpowder in the middle of the fourteenth century, on the battle field, completely changed the nature of injuries sustained (4). The barbers from the middle ages put together a gunpowder intoxication and poisoning theory (5). The theory entailed that the poisonous gunpowder and its direct blistering impact and damage and disruption of the tissue as a whole and its denting. Against poisoning from the gunpowder a fluidy mixture or wound potion was prepared, which was applied internally (6). The Paradigm was transformed from mechanical into toxic, whereby the gunpowder penetrated the body of the knight.

Treatment of oral detoxification was in balance with the four bodily fluids and in accordance with humoral theory, whereby poisoning of gunpowder was applied.
For the preparation of the wound potion, it was proofed that the old antidotes and new drugs had a specific effect on this intoxication to the body through the gunpowder. The substances withheld in the wound potion were juniper, *Typha* (lat.), *Artemisia vulgaris* (lat.) and *Dictamnus albus* (lat). Ambroise Pare (1510 - 1590) and Bartolomeo Maggi (1516-1552) convinced the military barbers to treat the gunpowder wounds applying adhesive plasters, which was very much milder, but equally efficient. These adhesive plasters soaked in *Lapis calaminaris* (lat.), *Cera alba* (lat.), bleached wax, *Aristolochia longa* (lat.), *Oleum commune* (lat.), olive oil, camphor, were specific for the use of the gunpowder wound. Due to the change in paradigm from internal intoxication, where the wound potion was used, and then for the external injuries where adhesive plasters were applied, there was an impulse for the emergence of military pharmacy. These methods of paradigm confirm the grounding and development of this phase within military pharmacy, which began with the implementing of gunpowder (7).
Figure 1. Ketham a Parisian manuscript from the time of King Charles VI (1380 – 1422) From: Archives for the History of Medicine 2 (1908/1909) (Bibliotheque Nationale of Paris Manuscript in Latin 22 v) 9, Sheet 36v) Hand drawing.

Figure 2. Women, monks and friars take care of the wounded after the battle in the 12th Century. From: Smirnov, I.E. (Editor). From: Smirnov, E. I. (Editor) Encyclopedia vocabulary war medicine, Moscow, 146 148, Volume 3, Page 728 (according to Gautier, L).

Abbildung 2. Frauen, Mönchen und Ordensbrüder kümmern sich um die Werwundeten nach einer Schlacht im 12. Jahrhundert. (German).

Figure 3. Slash -, Stab -, and shot wounds – man. From: Gesner, Conrad/Ch.; Surgery, Tiguri 1555 (University Library of Leipzig: Surgery page 55). In the sixteenth Century dealt with gunshot wound authorities in European Medicine. Studies of wound healing which were used to formulate questions for examinations in the field of barbers (see figure Nr. 5).

An Arrow, being drawn out of a wound to the back of an injured knight, using arrow pliers. From: Smirnov, E. I. (Editor) Encyclopedia vocabulary war medicine, Moscow, 146 148, Volume 3, Page 728 (according to Gautier, L). The monks specialize in treatment of mechanical wounds of the crusaders. Throughout the course of many battles was to take over the treatment paradigms of Arabic surgeons. The most important task was not to traumatize healthy tissue and organs. You can see this by the way in which the arrow tip was removed from the back of the crusader.

Figure 5. Thrusting and cutting – shot – and bites – Knight 1660 Engraving

Copper by Hanns Jerg Raidel, from Schmid, Joseph, Examen Chirurgicum, Augsburg, 1660 (State Library of Saxony). In the

seventeenth Century, the treatment of gunshot wounds caused by

gunpowder became part of the exam of a military surgeon and

apothecary. Improved powder firearms caused more wounds. This

fact indicates gunshot wounds compared to the third engravings.

Abbildung 5. Hieb-, Stich-, Schuss- und Bisswunden-Mann 1660, Kupferstich von

Hanns Jerg Raidel, Aus Schmid, Joseph, Examen chirurgicum,

Augsburg 1660 (Sächs. Landes-Bibl. Dresden) (German / Latin).
Figure 6.

Usenbenz, Johann Andreas (Editor)
Presentation of the military pharmacy through an Augsburg field surgeon, during the 30–year war (1618–1648). Joseph Schmid, Frankfurt / Main and Leipzig 1710 (University Library Hall: 160 Uq, h / 3 adnexal 1). This clearly shows the tendency to store medicines in draws, boxes and tins in typical outbuildings. In Military Pharmacy the shape of boxes became part of the guideline of the paradigm by which the tradition has been applied until present day. The pharmacist was dressed in civilian clothing, which was then replaced by a uniform.

Within this paradigm, the military dress later became a characteristic throughout the pharmaceutical services.

Abbildung 6.

Usenbenz, Johann Andreas (Hg.)
Figure 7. Military Pharmacy of the Frankish auxiliary troops during the Great Turkish War (1683 – 1699). From Stafski From the old pharmacy in Munich: Prestel publishing house. The shape of military pharmacy from the seventeenth Century shows that the origin stems from the pharmacy offizine. The draws were most consistent with the original paradigm which prevailed in the construction of the military boxes. Throughout construction, the unnecessary decorative elements were abandoned, whereby functionality dominated.

Throughout the course of the eighteenth Century, in battle the firearms became more effective and this caused many changes in military pharmacy. There was improvement in the form and usage of firearms. They became easier to use and were faster. The pharmacy needed to be repeatedly used by opening and closing the boxes, thanks to a simple construction. The change in modification of the military kits, in the eighteenth Century, had no influence to its paradigm and have been sustained until present day.
Military pharmacy carrying case around 1830 – Pharmacy Museum in Cracow, Poland. The introduction of chemical drugs in the nineteenth Century led to a certain change in adaptation in military pharmacy, without the necessity in altering the paradigm. The jars in which the chemical drugs were stored, not only changed in appearance but also in functionality. The earthenware glass jars were chemical resistant. The appearance of the jars and their functionality allowed precise dosage measurement on the battle field.

Abbildung 9. Tragbare Kofferapotheke um 1830 Pharmaziemuseum in Krakau, Polen (German).
Figure 10. Sanitary kit from World War I. Even during World War I, the military first aid kit box has retained its character, although the paradigm has not changed in form or practicality since the introducing of gunpowder. A willingness to change the paradigm could be observed by the crusaders, which was used for the development of the theory of local and general destruction of gunpowder. The consequence resulting from the theory of poisonous and destructive anatomical structures of the body, in action, was the introduction of the gunpowder military first aid kit box. Analyses indicated that the military kits and their origin stemmed from the outbuildings, but the changes and developments over the centuries remained within the same paradigm.

Abbildung 10. Sanitätskasten im ersten Weltkrieg.
Literature:
4. Peter Gorski, Andrew Radomski:


