

Indicia of Reliability: Evidence of Rigor Mortis and Cadaveric Spasm from the Body Image on the Shroud of Turin

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In the legal field, there is a term of art that is used with regard to evidence: “indicia of reliability.” When a piece of evidence is said to have this, it means that there are aspects to the evidence, or circumstances surrounding it, which give one warrant to think that it is trustworthy. As a criminal defense attorney, I know that the most trustworthy of these indicia are those which are so subtle that it is either doubtful or not reasonably possible that a potential fraudster could have, or would have, faked them.

Introduction

The, heretofore, unreplicated Shroud of Turin is a linen cloth that is thought by many people of various professions and religious faiths, or lack thereof, to be the authentic, bloodstained¹ burial cloth of Jesus Christ. On this cloth are two full, life-sized frontal and dorsal body images of an adult human male. A body of evidence exists which points to the man that it once covered as having died while nailed in the upright position to a cross. This paper will examine the following questions: (1) Does the body image on the Shroud exhibit evidence of a man who had a cadaveric spasm and then went into rigor mortis while still suspended from a cross? (2) Can rigor mortis be noticeably sustained in a cadaver for 39 hours post-mortem — the approximate maximum amount of time that Jesus was dead?²

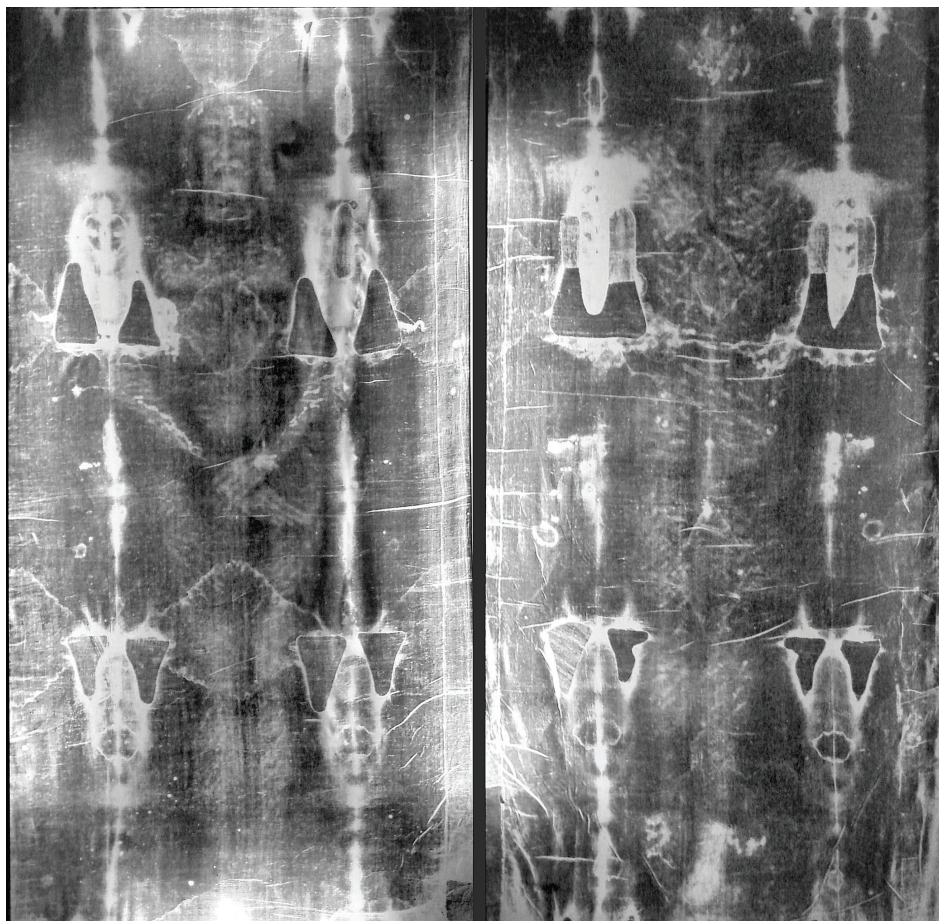
Postmortem Muscular Changes

Immediately after death, a total relaxation of a cadaver’s muscles occurs in what is known as **primary muscular flaccidity**. During this approximately 1-3 hour time period, the muscles remain soft, and the joints are capable of being flexed. At the end of this period of time, the process of **rigor mortis** commences with its predictably progressive **stiffening** of the body through the contraction of both the **voluntary and involuntary muscles**.

The pattern of onset for rigor mortis’ effecting the muscles is, from first-to-last, as follows: The involuntary heart muscles, the eyelid muscles, the muscles of the lower jaw, the neck, the upper limbs, muscles in the trunk, the lower limbs, and, lastly, the muscles of the fingers and toes [4], [5].

¹ With the exception of just a few of the genuine bloodstains that went onto the cloth as a liquid [1], the remaining bloodstains are transfers of blood clot exudates [2], [3].

² In 1st century Palestine, an hour was not strictly measured as 60 minutes, and one day was not strictly measured as 24 hours. Instead, while a day was typically measured from sundown-to-sundown, **a portion of a day could, also, be referred to as “a day.”** According to the Gospels, Jesus was resurrected on the third day. The first day of Jesus’ death was a **preparation day** before the Sabbath, the second day was the **Sabbath/Saturday**, and the third day was **“the start of the week.”** As such, the “first” day was a partial one on Friday (from the time of Jesus’ death at 3:00 p.m. until sundown.) The second day was the Sabbath which began at, or immediately after, sundown on Friday until sundown on Saturday. The third day was Sunday which began at, or immediately after, the sundown that closed out the Sabbath (which would be around 7:00 p.m. on what we consider to be Saturday.) The women saw the empty tomb at or around the break of dawn on Sunday (which would be around 5:40 a.m. during April in Jerusalem.) Therefore, Jesus’ resurrection could have occurred as early as soon after the close of the Sabbath or as late as dawn on Sunday. This would give a range of around 28-39 hours postmortem for when the Resurrection occurred on the third day.



Frontal and dorsal photonegative images of the Shroud of Turin as photographed by the professional portrait photographer Giuseppe Enrie in 1931 while in the presence of a French scientist, Secondo Pia (the first person to ever photograph the Shroud in 1898) and a priest. Most likely because Pia was dogged by many accusations of fraud regarding his shocking photographic negatives of the Shroud, –Enrie published details as to the precise camera settings he used, the exposure times, as well as the type of lenses, filters and lighting that he used when taking the photos. With Enrie’s photonegatives of the Shroud matching Pia’s, the cloud of suspicion which had been hanging over Pia’s head for decades, –was finally removed.

When rigor mortis first begins to develop, it is in a *reversible*, “unfixed” state, because not all of the muscle fibers have become rigid yet. During this period, the stiffness in muscle fibers can be broken by bending a joint which will correspondingly trigger rigidity in muscle fibers which have not yet stiffened and which are either at a higher or lower location on the body; if such a reestablishment of rigor mortis were to occur, it would typically be about 6-8 hours postmortem [6]. This window of time could, however, vary in situations where the onset and/or duration of rigor mortis are atypical.

Rigor mortis will continue to progress until it reaches its peak and becomes “fixed” with the body becoming almost rock-hard. This fixed state of rigidity will remain for a certain period of time, and then it will progressively diminish until it disappears. The muscles which first develop rigor mortis will typically be the first to lose it. During this decline in rigidity, the muscles undergo a new and *different form* of post-mortem relaxation known as “**secondary muscular flaccidity**” which is due to the action of proteolytic enzymes as well as the body’s overall process of cellular breakdown which corresponds to the changes occurring to the cadaver due to putrefaction.

Factors Affecting the Onset and Duration of Rigor Mortis

The timing for the onset of rigor mortis can vary from cadaver-to-cadaver (typically 2-6 hours postmortem) [7], [8], [9] due to varying internal and external factors affecting each of them [4]. Below are some important factors which can affect the onset and duration of rigor mortis:

Early onset: Age of death 18-50; increased muscular activity and/or recently fatigued muscles right before death — which can sometimes even result in almost immediate rigor mortis; violent³ death (being shot, having throat cut, electrocution); open environment; death preceded by violent spasms/convulsions of muscles (e.g. epilepsy, electrocution, lightning strike); “warm and humid”⁴ environment; high metabolic status (fever,⁵ exercise or summer heat) which can, also, cause rigor mortis to develop incorrectly during any stage of the process.

Delayed onset: Sudden death despite good health; a more muscular and healthier body prior to death (this will also result in greater rigidity during rigor mortis); cold ambient temperature, (and a temperature of 5°C will indefinitely preclude the onset of rigor mortis); death by hanging; death immediately preceded by *severe* hemorrhage; hemorrhagic stroke/apoplexy; and death by asphyxia.

Shorter duration: Death preceded by violent spasms/convulsions of muscles (e.g. epilepsy, electrocution, lightning strike); violent death (see, above); and “warm and humid” environment.

³ What exactly constitutes a “violent death?” Must the violent death occur quickly, or can the slow torture of crucifixion fall within the parameters of this definition?

⁴ It is unclear from the text if there is the requirement of warm ambient temperature coupled with humidity, or if either of these, alone, can result in the earlier onset and shorter duration of rigor mortis. The author was unable to find information on the effect of both a cold and humid environment on rigor mortis.

⁵ While cadavers typically undergo immediate postmortem cooling, an exception can arise with the phenomenon of post-mortem fevers. A retrospective study of 744 cases shows that 10% of all of these cases involving a violent death exhibit a rise in temperature (hyperthermia) for up to approximately two hours post-mortem [10]. Sepsis is one potential cause for a **post-mortem fever**.

Longer duration: Age of death 18-50; a more muscular and healthier body prior to death; cold ambient temperature; and less clothing on a body.

Additional factors that can affect the timing of the onset, duration and degree of rigor mortis in a cadaver are the degree of nourishment (including hydration) of the body prior to death, the amount of acid in the muscle tissue, and whether or not the cadaver has been moved subsequent to the onset of rigor mortis.

If there is more than one factor in play, the factors compete with each other in terms of whether or not the onset of rigor mortis will be early or delayed, and whether or not the duration of rigor mortis will be shorter or longer. It cannot be assumed that competing factors will cancel each other out in a 1:1 way, because they might not.⁶ For these reasons, rigor mortis is considered to be the least reliable of the post-mortem changes for estimating a cadaver's time of death.

Timeline for Rigor Mortis

After the typically 1-3 hour postmortem period of primary muscular flaccidity, the classic "Rule of 12" states that rigor mortis takes 12 hours to progressively set in, that it remains in full-force for 12 hours, and that it takes 12 hours to progressively subside. Therefore, according to the Rule of 12, from around 24-27 hours postmortem (which includes an estimated 1-3 hours of primary muscular flaccidity), the effects of rigor mortis would start waning and be gone by around 37-39 hours postmortem. With the window for Jesus' third-day Resurrection ranging from around 28-39 hours postmortem, does this mean that a later resurrection time would preclude any evidence that the body image on the Shroud would show evidence of rigor mortis?

In contrast to the Rule of 12, other sources report significantly expanded timelines for how long rigor mortis can be sustained. For example, it is reported that under typical circumstances, rigor mortis *begins to fade away after* approximately **36 hours of being in effect** [5]. Additional sources state that rigor mortis will *not typically begin to disappear* until around **36-48 hours** [5], [4] postmortem, and that there still might even be some rigidity that persists in the lower limbs for up to **3-5 days (72-120 hours)** [5], [4]. Other reports have the *onset* of rigor mortis spanning from **2-6 hours postmortem** [11], the *persistence* of rigor mortis spanning from **24-84 hours**, and the **gradual relaxation** of the muscles occurring *after* the **24-84 hour** time period [11], [8], [7] and [12].

Lastly, H.J. Mallach performed an expansive study [13] of rigor mortis by calculating the mean and standard deviation of data concerning cadaveric rigidity from 108 publications spanning from 1811-1960 [14]. He found that the mean for complete rigidity was 8 hours (with a standard deviation of 1 hour with the lower limit at 6 hours and the upper limit at 10 hours post-mortem.) Regarding the persistence of post-mortem rigidity, Mallach found the mean to be 57 hours (with a standard deviation of 14 hours with a lower limit at 29 hours and an upper limit being at 85 hours post-mortem.) Regarding the resolution of post-mortem rigidity, the mean was found to be 76 hours

⁶ An example of how early onset does not, necessarily, mean early cessation of rigor mortis is with drowning deaths —where muscular fatigue from trying to not drown might trigger the early onset of rigor, but if the body is in cold water, this could prolong the duration of rigor mortis.

(with a standard deviation of 32 hours with a lower limit at 12 hours and an **upper limit at 140 hours** [5.8 days] post-mortem.) See, also, [15].

Postmortem Repositioning of Body

If a cadaver is found in rigor mortis, the body's position is an indication of its position either (1) at the time of rigor mortis' onset (which might be different from the position of the body at the time of death —since the body might have been repositioned during the period of primary muscular flaccidity) or (2) after the body might have been repositioned by external forces during rigor mortis. A tell-tale sign that a cadaver has been repositioned is if it is still in substantial rigor mortis, but the body is positioned in a way that defies gravity without some means of support during the prior postmortem phase of primary muscular flaccidity.

If rigor mortis is “broken” through the forcible bending of a limb at a joint, rigidity will quickly become reestablished in the new position *if the body is still in a state of rigor*; however, the new rigidity will be less than what it had been before the rigor was broken [16], [11].

It is important to note that while bloating from putrefactive gases can sometimes cause parts of the body to distend so that limbs might defy gravity, this is not true rigor mortis. Moreover, while postmortem bloating due to the presence of the build-up of putrefactive gases might be seen as early as three days post-mortem [17], there is no evidence of post-mortem bloating on the Shroud's body image [18].

Cadaveric Spasms

Cadaveric spasms are a rare and controversial form of post-mortem stiffness. They involve a group of muscles that (1) are heavily used right before death, (2) immediately stiffen after death, (3) remain stiff with the onset of rigor mortis, and (4) remain stiff until rigor mortis is resolved.

Retired chief medical examiner Dr. Marcella Fierro has only seen three instances of cadaveric spasms in her over 30 years of practice. In all three of these cases, **asphyxia** was an important factor in the cause of death [19].

Another case evidencing a cadaveric spasm was with a murder victim that was found with his mouth unusually positioned —his upper central teeth were visible and biting down on his lower lip. Typically, cadavers are found with an open mouth due to the jaw's dropping during primary muscular flaccidity. Rigor mortis then preserves the open-mouthed position, and then the mouth continues to remain open during the period of secondary muscular flaccidity [20], and the corresponding decomposition of the corpse.

Another case evidencing a cadaveric spasm was when a man was chasing his wife with a straight razor, and she shot him in self-defense. The husband collapsed to his knees and died instantly while still clutching the weapon (in defiance of gravity) that he had been holding in the midst of his attack [15].

Although cadaveric spasms can mimic rigor mortis, they are distinguishable from it in that they present with stronger muscular stiffening —making cadaveric spasms more

difficult to break [21], [22]. Moreover, while cadaveric spasms can effect the entire body, they more typically involve a particular part of the body that would have been under stress at the time of death [10]. Lastly, the immediacy of a cadaveric spasm at death means that it can preserve muscles in a stiffened, gravity-defying state that can bypass the gravity-inducing influence of primary muscular flaccidity.

Evidence of Crucifixion, Death, Cadaveric Spasm and Rigor Mortis

I. Zugibe

Dr. Frederick Zugibe, M.D., PhD in Human Anatomy, was the chief medical examiner of Rockland County, New York from 1969-2003. He had performed approximately 10,000 autopsies during his tenure. Below are his findings pertaining to the issue of evidence of rigor mortis in the body image on the Shroud as well as the position of the body at the moment of death that formed the image on the Shroud [23].

While acknowledging that the duration of rigor mortis can vary, he noted that it generally takes approximately 60 hours for its effect to completely disappear. Zugibe's interest in the Shroud prompted him to perform experiments where he tied volunteers in an upright position to crosses in order to observe how their bodies would react to being suspended in this manner. Through the suspension experiments, as well as his experience as a medical examiner, he was able to make important observations about the body image on the Shroud. Zugibe observed that, in an overall way, the body image on the Shroud was created from a man that was in rigor mortis.

He further noted that the positioning of the leg and foot on the body image is evidence of rigor mortis at the time of image formation, because the right calf is denser than the left, and there is only a partial imprint of the left heel which suggests that there is "either a very **slight bend at the left knee** with the **foot flexed slightly forward or a turning inward** of the left foot over the right." [Emphasis added.] He emphasized that if rigor mortis had not been in effect, the legs would be symmetrical.

Moreover, he observed that the position of the **right sole and heel** further evidences that the knees are, indeed, bent. Zugibe's suspension experiments confirmed that when a crucifixion victim is nailed to a cross with the soles of the feet nailed flat to the vertical beam, this will flex the knees forward about $120^{\circ} \pm 2^{\circ}$.⁷

Zugibe noted **asymmetry** with the **buttocks** — where the right side is lower than the left. Moreover, this asymmetry corresponds with the asymmetry he noted with the position of the legs; both are evidence that the body was neither in the primary nor the secondary stage of postmortem muscular flaccidity, but, instead, in rigor mortis.

In observing the **rounded appearance of the calves**, Zugibe noted that this is in *contrast* to the expected flattened appearance that a cadaver would exhibit when reclining flat with unbent knees. As such, this is further evidence of both bent knees and rigor mortis.

⁷ Zugibe's experimental findings of the angle that the crucifixion victim's knee would bend coincided with Barbet's hypothesis.

While the dorsal body image appears shorter in comparison to the frontal body image, Zugibe explained that this is due to the **curvature of the body**, and the **slight bend in the legs** which makes the legs on the frontal image appear 7cm longer. Also, the **left foot is slightly shorter than the right**, and the image of the tip of the right foot has an unusual position. This is considered by some to be evidence that one nail was used to secure both feet to the cross.

Additional evidence that caused Zugibe to think that the body was in rigor mortis while still nailed to a cross was that the **neck is bent forward** in a way that makes it not visible in the frontal image. With the dorsal image, there is an **elongation of the back of the neck** which anatomically corresponds to the frontal part of the neck being bent forward. The lack of a neck with the frontal body image is, also, indicative of the **head being caught between both of the shoulders**. This would limit the head's range of motion from front-to-back as well as from side-to-side, and this is consistent with the forward-facing facial image on the Shroud. As was confirmed by Zugibe's suspension experiments, these neck-shoulder-head positions are consistent with someone being nailed to a cross in the upright position.

While the head appears caught between the raised shoulders, the **stiff-appearing arms**⁸ are in a **lowered** and very stylized **position** which is inconsistent with the outstretched arms of a person nailed to a cross. So, does this mean that Zugibe's determination that the Man of the Shroud died and went into rigor mortis while still suspended from a cross is incorrect?

Absolutely not.

In fact, this is yet another extremely subtle piece of evidence that bears the hallmark of authenticity, instead of artifice, once it is both noticed *and* understood. Zugibe saw compelling evidence that **the arms had been repositioned during rigor mortis**. With knowledge from Dr. Pierre Barbet's⁹ [1] suspension experiment, and confirmed by his own numerous suspension experiments, Zugibe knew that when a body is nailed to a cross, the arms will be at an angle of approximately 65°-68° from the upright with a cadaver weighing about 175 pounds (the estimated weight of the Man of the Shroud.) In viewing the blood flow patterns on the back of the arms, and in the context of all of the other evidence that he was observing from the body image, Zugibe concluded the following:

It is obvious that the **blood flows on the arms** occurred right after removal of the nails (which had sealed the wounds during suspension) **from the hand area**, causing the blood that contained fibrinolysins to flow down the back of the arms from the nail exit wound **while the arms were suspended above the head still in rigor at the same angle in which they had been nailed to the crosspiece**. The [blood] flow patterns are consistent with the position of the *crucarius* on the cross. [Emphasis added.]

⁸ Acclaimed forensic pathologist James Cameron agreed with Dr. Zugibe that the arms on the body image appear to be stiff due to rigor mortis and that the crucifixion victim's arms that were frozen in the position of crucifixion on the cross had to have had the rigor broken at the shoulders in order for the arms to be positioned as they are on the Shroud [23.]

⁹ Dr. Barbet (1884-1961) was a battlefield surgeon during World War I, and the chief surgeon at St. Joseph's Hospital in Paris.

Even with the breaking of rigor mortis in the arms (in order to fold them into the bent position as seen on the Shroud), Zugibe explains that this would not have altered the position of the neck and shoulders. He, also, found that the **chest appears raised** in a way that is consistent with a cadaver's experiencing rigor mortis while still suspended from a cross.

With all of the aforementioned evidence, Zugibe concluded that the position and appearance of the frontal and dorsal body images on the Shroud indicate that this cloth once wrapped a crucifixion victim whose body went into rigor mortis while still on the cross, whose arms were repositioned while in rigor mortis, whose body was still in rigor mortis at the time it was placed into the Shroud, and whose body was in rigor mortis at the time the body image was formed.

2. Bucklin

Dr. Robert Bucklin, M.D., J.D., was a forensic pathologist for over 50 years and had served as the acting chief medical examiner in Los Angeles County, California. He had performed over 25,000 autopsies, and he used his expertise to perform an autopsy-like investigation on the frontal and dorsal body images of the Shroud from two life-sized photographs of it. The following [24] are some of these pertinent observations as they pertain to the aforementioned questions raised in this paper:

Bucklin reported that the body image exhibits signs of rigor mortis due to an overall appearance of stiffness as well as "specific alterations in the appearance of the lower extremities from the posterior aspect." Regarding the lower extremities, he reported the following:

The imprint of the right calf is much more distinct than that of the left indicating that *at the time of death* the **left leg was rotated in such a way that the sole of the left foot rested on the ventral surface of the right foot with resultant slight flexion [bending] of the left knee.** *That position was maintained after rigor mortis had developed...* [T]here is a reasonably clear outline of the right foot made by the sole of that foot having been covered with blood and leaving an imprint which reflects the heel as well as the toes. The left foot imprint is less clear and it is also noticeable the the left calf imprint is unclear. This supports the opinion that **the left leg had been rotated and crossed over the right instep** in such a way that an incomplete foot print was formed. [Emphasis added.]

Bucklin further reported evidence of crucifixion from the images and bloodstains on and around the feet:

In the center of the **right foot imprint, a definite punctate defect** can be noted. This puncture is consistent with an object having penetrated the structures of the feet, and from the **position of the feet** the conclusion would be reasonable that the **same object penetrated both feet after the left foot had been placed over the right.** [Emphasis added.]

Additional evidence that the signs of stiffness in the body image were from a cadaver in rigor mortis is derived from what Bucklin observed about the **bloodstain from the chest**:

There is a distinct evidence of a gravitational effect on this stain with the blood flowing downward and *without spatter of other evidence of the projectile activity which would be expected from blood issuing from a functional arterial source*. This wound has all of the characteristics of a **postmortem type flow of blood** from a body cavity or from an organ such as the heart. At the upper plane of the wound is an **ovoid skin defect** which is characteristic of a penetrating track **produced by a sharp puncturing instrument**. [Emphasis added.]

Regarding the chest, he further noted the appearance of “[a]n increase in the anteroposterior diameter of the chest due to bilateral expansion.” This is what occurs when one breathes in or inhales. More specifically:

During inspiration, the anteroposterior diameter of the thorax is increased when the ribs are raised. Because ribs slope downward, any elevation during inspiration results in an upward movement of the sternum at the manubriosternal joint and an increase in the anteroposterior diameter of the thorax [25].

Although Bucklin does not state this, **the author observes that Bucklin’s report concerning the appearance of the chest in the body image is evidence of a cadaveric spasm in the chest that preserved the last inhaled breath of the Man of the Shroud**. While inhaling requires the use of muscles, exhaling is often a passive process unless, for example, someone is exercising. But, with the primary muscular flaccidity that occurs immediately after death, the chest muscles would relax which would cause the passive process of exhalation [26]. However, a cadaveric spasm at the moment of last inhalation at the time of death would fix the muscles that were used to effectuate the bilateral expansion (until the onset of *secondary* muscular flaccidity.)

Regarding evidence that the body was in the position of crucifixion, Bucklin noticed that the flow of the bloodstains on the wrist and the two arms on the frontal image of the Shroud could not have happened while the arms and wrist were in the position that they are depicted in on the Shroud, because they would have flowed counter to the laws of gravity [24]. In reconstructing the position that the arms would have needed to have been in so as to create blood flows on the wrist and arms like with what is seen on the Shroud, Bucklin indicated that the arms would have needed to be outstretched upward in a 65° angle with the horizontal.

Regarding the position that the body was in at the time of death, Bucklin reported:

The position of the **puncture¹⁰ defects in the wrist**, coupled with the blood flow towards the elbows, and also associated with the punctures of the feet, permit the pathologist to conclude that the victim was in an upright position

¹⁰ See [27] regarding the use of nails used for crucifixions in the 1st century. Also, the patterned injuries all over the frontal and dorsal areas of the body image are consistent with the body having received a commonly administered pre-crucifixion scourging.

with his arms extended when the blood flow took place. A **crucifixion type posture** would be the most plausible explanation for these findings.
[Emphasis added.]

3. Piczek

In observing the body image on the Shroud, the world-famous artist Dame Isabel Piczek noticed what Zugibe and Bucklin also noticed —bent knees. She conducted an experiment in order to confirm her observation. She instructed an artist’s model to recline on his back with his arms, hands and feet positioned like the body image on the Shroud. Then, she had him take two different poses: The first was with him reclining flat on his back with his legs completely flat. The second was with him reclining flat on his back but with his knees bent. She discovered that the **pose with the bent knees matched the body image on the Shroud with respect to the positioning of the crossed hands in relationship to the genitals**. Piczek further demonstrated that if the body that formed the image on the Shroud had been reclining on his back with unbent legs, the genitals would have been exposed; however, this is contrary to what is seen with the body image on the Shroud [28].

Conclusions

From the evidence presented, yes, there are many factors which can affect the onset and duration of rigor mortis. And, yes, there are many of these factors that we would expect to be present due to both the pre-crucifixion and crucifixion tortures that Jesus underwent that Holy Friday. However, many of these factors compete with each other to one degree or another. As such, we cannot pinpoint which factors ultimately dominated in Jesus’ particular situation with regard to whether or not rigor mortis was early or delayed in its onset or shorter or longer in its duration. Further complicating matters is that Jesus’ death involved so many extreme circumstances that it is doubtful that any physician or forensic medical examiner has ever even encountered a corpse that had been through the type of extended torture that Jesus underwent. As such, in many ways, assessing the situation with the body image on the Shroud is what lawyers would call a “case of first impression” due to the uniqueness of the circumstances that are presented.

So, are we resigned to not knowing whether or not the body still exhibited rigor mortis at the time of image formation?

Absolutely not.

The key to unlocking the answer to our question can be found in the Latin legal expression *res ipsa loquitur*: “the thing speaks for itself.” The aforementioned details —regarding the head, neck, shoulders, chest, arms, legs, bent knees, calves, feet, and soles, as well as the bloodstains at the feet, wrist, arms and chest— all contain “indicia of reliability” that point to the body that made the image on the Shroud as being a crucifixion victim who died on a cross in the upright position, and that he immediately went into a cadaveric spasm which was quickly followed up by rigor mortis while he was still nailed to the cross. Additionally, the evidence points to this crucifixion victim’s having had his arms repositioned while still in rigor mortis—most likely for several reasons: (1) so that his body would fit within his burial cloth, (2) so that His body could fit in a rock-hewn niche in Jerusalem, and (3) so that the arms would be positioned in a graceful, respectful and modest way for burial.

Lastly, the aforementioned evidence —and what we can see with our own eyes when examining photographs of the body and bloodstain images on the Shroud— indicates to us that the body was in rigor mortis, and likely, at least in part, in a cadaveric spasm —at the time the body image was formed on the linen cloth.

Regarding the aforementioned medical, forensic and anatomical observations from the body image on the Shroud, where is the evidence that anyone has ever observed or could have even understood many of these details until the latter part of the 20th century? The author is unaware of any such evidence and believes it to be non-existent.

Since the eyes cannot see what the mind does not know, a medieval forger cannot create that which he cannot conceive. But, once the mind becomes aware of these important medical, forensic and anatomical details, the eyes can then see. And, if the ears listen, they will hear the whisper of the body image on the Shroud speaking for itself.

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An extended version of this article is available at <http://bstsnewsletter.com/pdfs/Indicia-of-Reliability-Extended-Version.pdf>.

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How might the Vatican announcement ‘New Norms on Alleged Supernatural Phenomena’ affect Shroud Research?

by Philippa Foster

On 17 May 2024, there was a very important announcement from the Vatican which has implications for research into holy relics and is therefore of interest to Shroud scholars. The Shroud is under the custodianship of the Pope and therefore any changes to how religious relics, and the miraculous phenomena associated with them, are regarded by the Vatican, is of great importance to those seeking any future testing of the Shroud.

The Vatican’s Dicastery for the Doctrine of Faith¹ released a document entitled ‘**New Norms on Alleged Supernatural Phenomena**’. It contains guidelines for handling reports of miraculous phenomena, i.e. how they are reported, investigated and integrated into doctrine. It is an unprecedented updating of centuries old traditions, and I’d like to draw attention to a few key points from the main headings. (*Text quoted from the report appears in italics.*)

The Section: ‘*Reasons for the new norms*’ recognised that historically, the need for *urgent pastoral responses* to ‘miraculous’ phenomena *for the good of the faithful*, risked releasing information before all the stages of proper *discernment* for a miracle had been observed. This could lead to corrective statements needing to be issued later by the proper authorities.

The Section: ‘*Spiritual fruits and risks*’ noted that shrines & pilgrimages play an important

¹ <https://www.vaticannews.va/en/vatican-city/news/2024-05/dicastery-doctrine-faith-supernatural-phenomena-norms.html>