NUCLEAR MEDICINE AND ITS RELEVANCE TO THE SHROUD OF TURIN

August D. Accetta MD, Kenneth Lyons MD, John Jackson PhD.

Hypothesis: If indeed a corpse created the image we see on the Shroud, then the source for the energy received by the cloth may be from the molecular bond energy and/or nuclear forces within the body in some way interacting with the cloth. The closest practical tool we have to study this today is nuclear medicine.
Keywords: STURP: Shroud of Turin Research Project, Tc-99m MDP: Technesium-99 metastable methylene diphosphate, V-P-8: Vertical projection photodensitometer.

Introduction: The Turin Shroud bears an image of an apparent crucified man, chemically the result of some dehydrative, oxidative, and subsequent carbonyl conjugative process of cellulose, the origin of which is heretofore enigmatic.[1] Many properties of the Shroud are however understood quite well. For example, it is clearly understood through the work of STURP and others that the Shroud did in fact wrap someone at some point in time and that it is not the product of some medieval artist.[2]

The Shroud image suggests quite strongly the presence of many skeletal details e.g. carpal and metacarpal bones, some 22 teeth, eye sockets, left femur, left and possibly right thumbs flexed under the palms of the hands, as well as soft tissue and soft tissue injuries; all presumably originating from some form of radiation emitted from the body enshrouded.[3]

No scientific human model has been satisfactorily utilized to offer elucidation of the origin of this quality an image. Many have postulated image formation theories e.g. Pellicori-Germans "latent image" and Jackson et al direct contact experiments which he concluded had quite negative results and have effectively been ruled out.[4] Others have suggested diffusion.[5] Schwalbe and Rojers however, failed in the properties not limited to sharpness and clarity of the image.[6] Later researchers such as Giles Carter and Thaddeus Trenn have studied radiation biology in a theoretical framework and have achieved promising results in terms of image superficiality and clarity.[7]

The human radiation model seems to offer the greatest application to the Shroud image thus far.

MATERIALS AND METHODS

Tc-99m is a metastable (i.e. 99 "m") isotope that decays with a six (6) hour half life yielding a single gamma ray at 140 kev, (There are low energy characteristic x-rays 20 kev and below which are not detectable by our cameras).

We used a gamma camera with a 3/8" thick, wide field, sodium iodine crystal which is ideally suited to the 140 kev energy of Tc-99m MDP. The energy resolution is 9.8% and sensitivity is 135cpm/microcurie. The collimator used was a long bore ultra high resolution, yielding a system resolution of 7.5 mm @ 10cm and 11mm @ 15cm. The long septal length preserves resolution at depth with 11mm @ 15cm.

The Tc-99m or MDP Binds to bone by chemisorption. Approximately 50 % of the injected Tc-99m MDP or HMDP is taken up in the bones.

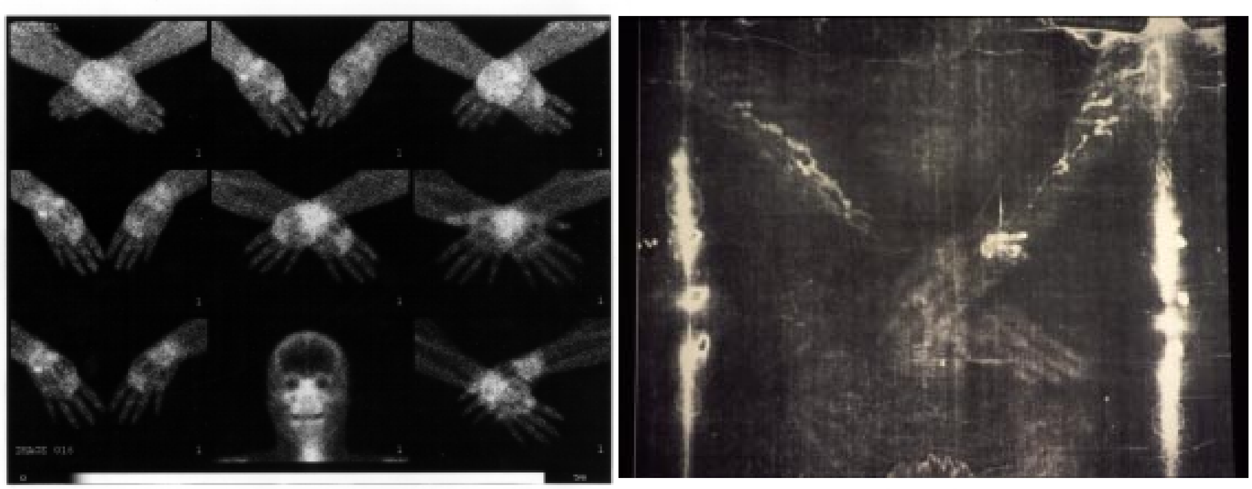
High quality images depend upon an optimum target to background ratio. Thus the percentage of Tc-99m MDP compound that binds to protein and red blood cells greatly affects the quality of the bone scan. Tc-99m MDP is more satisfactory for bone than other compounds due to low protein binding and rapid clearance from soft tissue and blood by renal excretion. At 2 hours post injection about 10% of administered Tc-99m MDP is protein bound. At 4 hours post injection, 3% of the injected per liter dose of Tc-99m polyphosphate is bound to RBC’s and 0% of Tc-99m MDP or HMDP is bound.

We did timed sequence scanning in order to manipulate this predictable bioavailability to optimize our soft tissue to bone ratio (background to target). The early images during the first 15 minutes had a high soft tissue and blood component. Later as the blood level and soft tissue concentration diminished, most of the photons came from bone. The last images were showing primary bone photons with most of the soft tissue contribution attributed to low angle scattered photons.

CONCLUSIONS

The human radiation model we used generated a number of characteristics which parallel the image on the Turin Shroud. It must be noted that these researchers in no way are claiming that they reproduced any of the exact characteristics of the Shroud image. Rather, those characteristics which are similar can potentially help to explain better those seen on the Shroud as well as point to the probable general origin of its image.

First we demonstrated that a human model can be used to generate images resulting from emitted radiation, that resemble the image on the Shroud. (see fig. 1)



Shroud Image

Nuclear Image

fig1.

Second we demonstrated that this radiation when captured by a vertical collimator can yield the verticality parallel seen on the Turin image.

Third we demonstrated that the nature of the emitted radiation is such that it produces an image void of a sharp outline such as that on the Turin Shroud. (see fig. 2)

Shroud Image

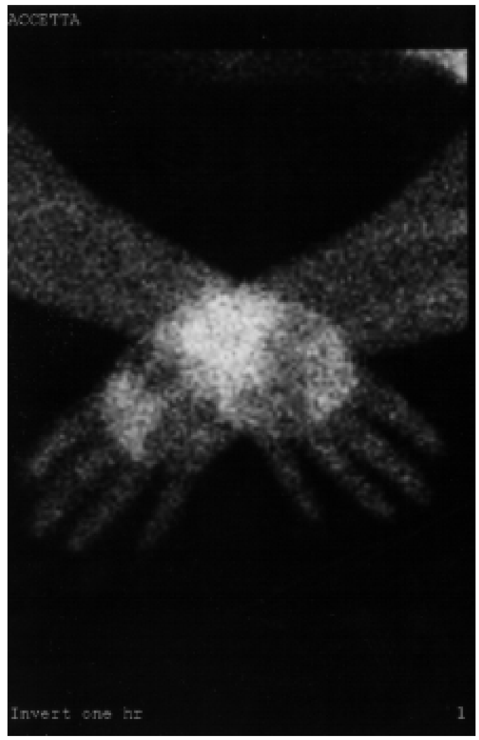
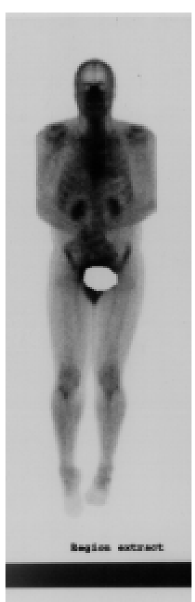


fig. 2

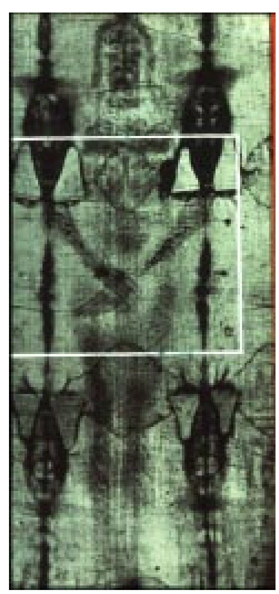
Nuclear Image

Fourth we demonstrated that the resulting radiation image is void of any light focus such as the Shroud. (see fig. 3)



Nuclear Image

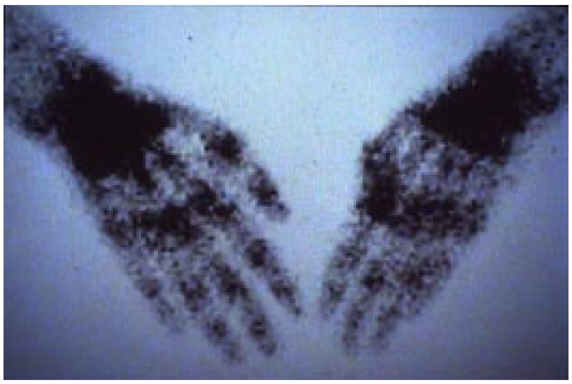
fig. 3



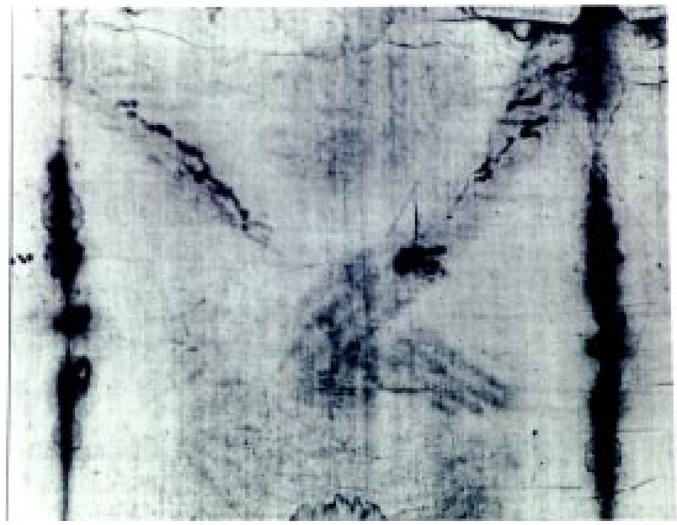
Shroud Image

Fifth, due to the nature of the collimator, no side images are observed though the radiation is being emitted circumferentially. (see fig. 3)

Sixth, the fact that soft tissues, skeletal information, as well as pathology in these tissues, can all be imaged concomitantly using the nuclear medicine model, demonstrates the parallel to the Shroud where the same is observed. (see fig. 4)

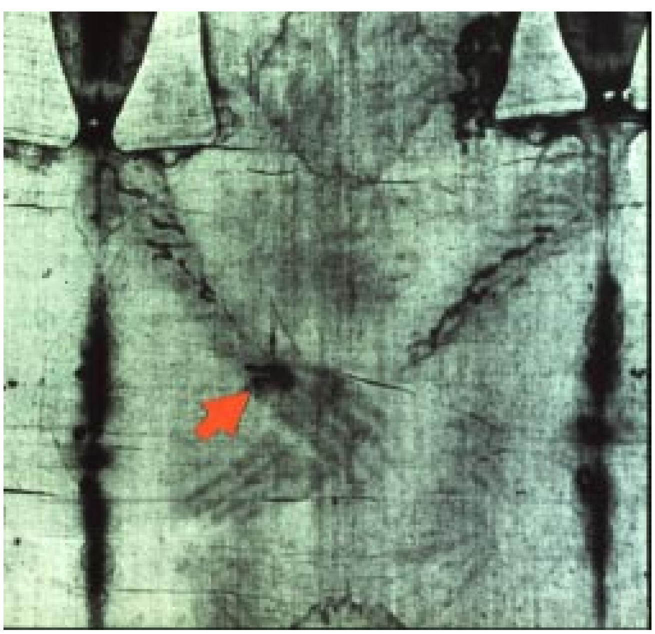


Nuclear Image
(fig. 4 notice metacarpal bones and phalanges noted in both images.)



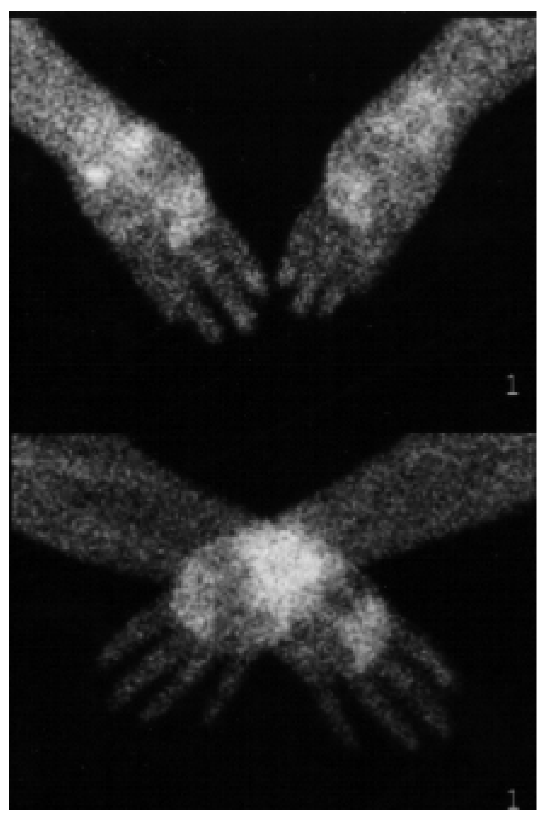
Shroud Image

Seventh we demonstrated that the thumb flexed under the palms of the left and right hands can be imaged, (precluding the need of any so called contact method), which parallels the Shroud. In addition, the V-P-8 image of the hands demonstrate the underlying thumb similar to that of the Shroud.(see fig. 5)

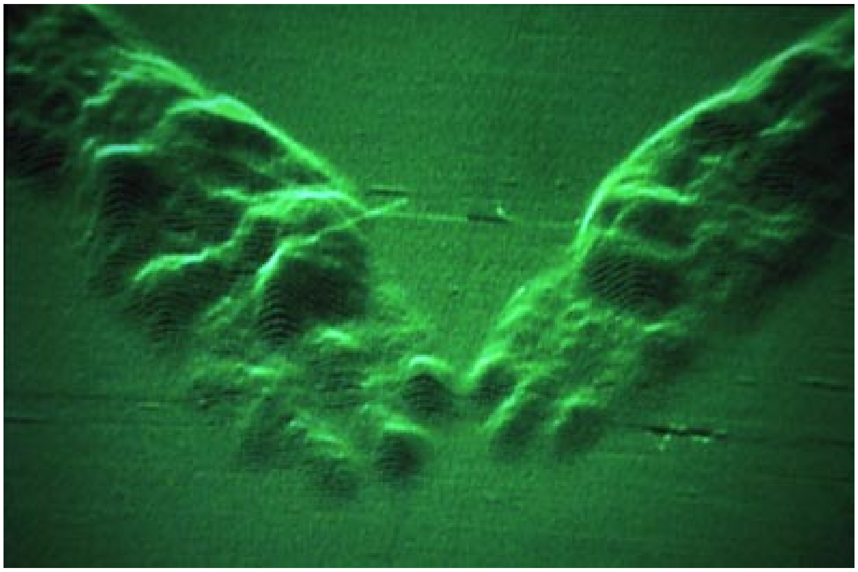


Shroud Image

(fig. 5)



Nuclear Image



(fig. 5 cont.) Nuclear Image

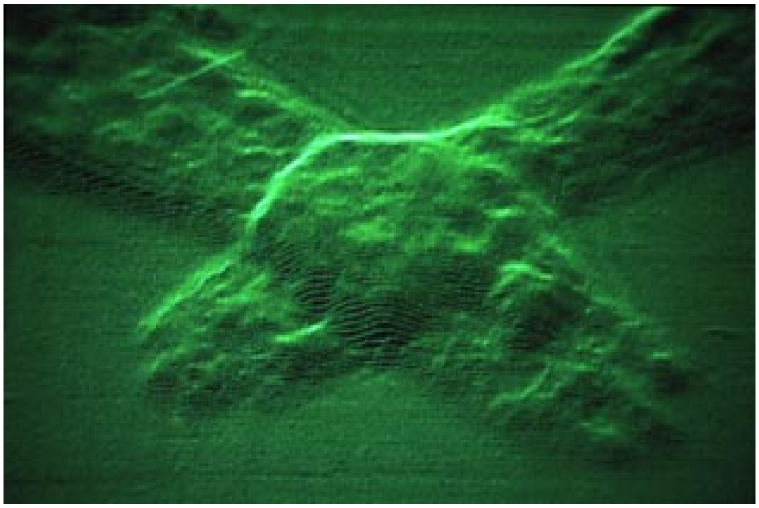
Eighth we demonstrated that the nature of the emitted radiation was volumetric in that the image generated had higher density shading (higher number of pixels) towards the center or midline of extremities, digits, and torso, then fell off in intensity laterally. This differential dosimetry should and in fact does yield a Z-axis relief (or isometric projection) when scanned by V-P-8 photodensitometer. (see fig. 6)

Nuclear Image

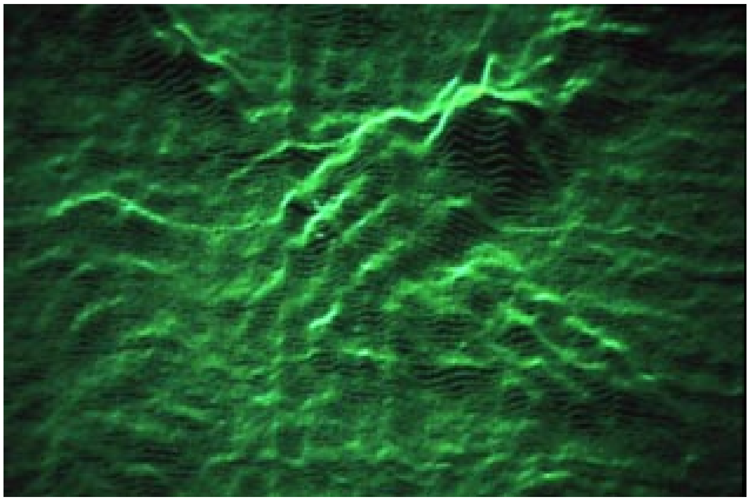
Shroud Image

(fig. 6)

Ninth, isometric projection (V-P-8) of our generated images, yielded a striking similarity to the V-P-8 image of the Shroud at the fall off of the left fingers. Knowing this is due to a 75-80% drop in signal intensity on our image, its relevance to the same phenomenon on the Shroud should not be overlooked and seriously considered to be a function of a similar effect i.e. a dosimetric sudden fall off of signal or radiation. (see fig. 7)



Nuclear Image



(fig. 7 Note the dramatic falloff of the proximal phalanges.)

Shroud Image

SUMMARY

The radiation model described in this study characterized much of what we see in the Shroud image in terms of the behavior of radiation being emitted from a human source. We believe the nuclear medicine model is the best currently available to aid in our understanding of the Shroud image. We feel our results effectively demonstrated plausibly that the Shroud image resulted from an organized emission and/or organized collection of radiation from the body and/or cloth respectively.

NOTE FOR FUTURE STUDIES

Though we obtained quite analogous results with respect to arm, hand, and leg images, the head image was highly distorted on V-P-8 (i.e. not yielding a conforming relief of a natural face). The author believes this distortion arose from the volume of radiation emitted from the distal two-thirds of the head. This can be studied in a future experiment by subtracting out this radiation, which we plan to do in the near future.

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