

Bioethics Beginnings and Fatal Misunderstanding: Hazardous Chemical Medical Experimentation of Eye Pigmentation Conducted by the “Angel of Death”

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Historical Background

The evolution of medical knowledge is a long history, one that is often tied to tragic historical events. The study of medicine is intended to positively impact humanity and improve the lives of human beings, from producing biologics to combat modern warfare to diagnosing effective techniques to ensure the survival of the human race. The Nazi regime had a significant impact on World War II and the medical experimentation completed by a variety of physicians at different concentration camps influenced our modern-day knowledge and technology. Misunderstandings behind acceptable practice of racial hygiene and medical experimentation for the betterment of human kind were instigators that resulted in the catastrophe known as the Holocaust.

Anti-Semitism was not initially a primary component of the definition of racial hygiene, prior to 1933 Jews were racially profiled to be a “fit” race due to the fact that many of their adults active in the professional field were physicians, lawyers, and bankers. The maltreatment of African-Americans in the United States was interpreted by Nazis as an acceptable use of “unworthy” races which later developed into the Aryan race being defined by physical, phenotypic traits instead of the genome. The initial ideology prior to the 1933 racial hygiene was rooted in the social Darwinist theory arguing the value of variation in genetics and racial purityⁱ.

Physicians were never recruited by the Nazis or any SS officers. Rather, they came willingly to the call of a challenge to reinstate a pure Germany and reinstall genetic perfection in the populationⁱⁱ. The physicians were the selection technique applying biological ideology to the people of Germany. At the hands of science, physicians were intrigued at the prospect of

producing an Aryan race, a cleansing to the problematic populations: the homeless and other filthy intruders that had come to overtake the streets of Germany. The initial question of racial hygiene was hypothetical; there were discussions on potential solutions and governmental laws but it was not until after the cult behind Hitler became increasingly strong that the Final Solution was developed and medical experimentations began occurring in concentration camps with a field ripe for picking and without any pests of ethical implicationsⁱⁱⁱ.

Holocaust survivors, those specifically that were subjects of medical experiments, argue that science is the study for the betterment of mankind and not for the sake of a physician’s curiosity^{iv}. The majority of medical experiments produced from physicians in agreement with Nazis were unethical and without a scientific basis. No hypotheses were created, no consent from subjects, and no official contracts for continued research from upper SS officials.

Some of the most well-known research was conducted for the ensured survival of Germany’s air force pilots. In case pilots were shot down over the ocean and their parachute did not function and they were in free fall with or without oxygen, military officials wanted confirmation on the amount of time before death as well as best possible healing techniques to keep the soldiers alive post trauma. Most of these experiments were contracted to physicians in concentration camps and there was a premise of agreement for how experiments were to be conducted and for a certain longevity until a solid conclusion could be produced.

On more than one occasion physicians provided the concluding statement to military officials but then

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continued research in other domains without any approval from Hitler. Mengele was one of these physicians, his interest was in the genetic structure of DNA and the possibility of certain genomes being better fit for survival. Commonly known as the “Angel of Death” for his merciless murders, Mengele’s experiments included dissection of twins after lethal injections to determine differences in organ functions and other biochemical analysis. In more than one instance, he attempted to sew two twins back to back, connecting organs and blood vessels. Witnesses recall their horrific screams all day and throughout the night until eventually three days later they died of gangrene. During the Nuremberg trials the lab assistants to Dr. Mengele recount the eye punctures used to determine if eye color can be changed with a chemical dye injection and the mortifying images forever stuck in their memory^v. Dr. Mengele intended to change the eye color of his patients to produce an Aryan race with blond hair and blue eyes. Many children recall his fascination with their hair which was the reason their heads were never shaved or cut unwillingly.

The Eye Structure

The eye has three different tissue layers, the fibrous, vascular, and nervous tunics. The cornea which is the spherical disc that allows light to pass through while restricting foreign substances entrance is a layer of the fibrous tunic. The vascular tunic is what supplies blood to the eye and is located deep in the fibrous tunic with three major parts. The choroid is lining the sclera, the white of the eye, and has a high concentration of melanin helping the absorption of light; individuals with brown or darker color eyes have higher concentration than those with light blue or green eyes. The ciliary body is the muscle contraction that allows the eye to pull on fibers resulting in adjusting the lens, thereby allowing the eye to focus light. The iris is the pigment, it is a smooth muscle between the ciliary body and the pupil. The mass of protein fibers is found posterior to the iris, which was arguably the focal point of Mengele’s studies. The retina is a thin layer of delicate nervous tissue containing a variety of cells essential for sight, some of which are connected to the brain through the optic nerve^{vi}.

The extreme danger from Mengele’s experiments was the chemical injection that resulted in blindness and often death. Dyes are aromatic organic compounds, most often carcinogenic or mutagenic and nearly always toxic to health. At the basis, a dye is fundamentally formed from a structure of benzene, which to humans is a colorless liquid, and a delocalized electron system^{vii}. As seen in the Bradford protein assays, the absorbance shift in a compound will be due to the binding of the protein to the dye via electron donation. The lens is the largest

protein mass located posterior the iris, even with effective injection the extensive penetration of the needle would alone destroy the flexibility of the lens thereby inactivating its ability to shift from ciliary muscle contraction and inhibiting any reaction to the change of light intensity.

Mengele’s attempts to change eye color by inducing a chemical dye via injection would result in extensive damage to the corneal endothelium allowing the chemical dye of unwarranted hazardous molecules into the fibrous tissue, immediately influencing the vascular tunic’s efficiency of supplying blood. The aromatic molecules would overload the bodily response completely damaging functioning muscles to contract and dilate pupils and account for the shifting wavelengths of light. Although the chemical dye would react with the protein in the lens of the eye, the injection of the chemical dye, if too deep, would result in inconclusive evidence and no eye color change at all.

Indocyanine green is a common vital dye used in optometry today and although harm may be dose and time dependent there is evidence of toxicity at the basis of the chemical compound. Risks of photoreceptor loss, retinal pigment epithelium atrophy and loss of epiretinal cellular integrity are few of the possible effects^{viii}. The cyanine dyes contain a –CH group between two heterocyclic rings that contain nitrogen, these amphiphilic properties allow the bonding to cellular and acellular elements in living tissues. This component of the dye allows it to bond to cells in the eye and other counterparts in order to clearly identify tumors and precisely diagnose the area of interest during surgery. Infracyanine green is nearly identical to indocyanine green with exception to the presence of calcium iodine as a reactant which results in infracyanine green as a safer dye^{ix}.

Due to the small size of the organic compounds that consist of a dye, the chemical travels into the retina with ease. Even today the harmful side effects are not entirely distinguished. New technology with lasers produces less invasive procedures than chemical dye injections. Even if Mengele could have changed the eye color of his patients, the alteration would not result in a heritable trait, a fact Mengele would have known after his extensive research under Dr. Otmar von Verschuer. The answer still remains unknown as to why Mengele completed these eye injection experiments, some of his data was destroyed when liberation of other concentration camps began so the chemicals used and results acquired will forever remain a mystery. Furthermore, the lack of biochemical markers from Mengele’s chemical injections blocks theoretical conclusions to account

for the extremity of pain and suffering victims experienced following the injections.

Many survivors who were children at the time of the Holocaust recall the blindness, they interpreted everything they saw and understood the masses of people arriving each day that were directed to the concrete building puffing fumes were destined to death. They understood the piles of corpses had been beaten and shot dead, everything they saw, everything they encountered they retained.

Post Experimentation: Life after Liberation

Mengele’s children recall the SS officers attempting to burn all surrounding factory buildings of the murdered Jews belongings, their clothing, hair, shoes, items of value. Victims remember the images of hurried soldiers and the unusual look on their faces: one of fear. Mengele however continued his research as though the Russians were no closer to liberating the camps than they were years prior, his calm demeanor and soft eyes charmed the children in a more chilling way, their fear of death was unconceivably strong^x. Until morning after morning, Mengele was absent for the check in routine, the Auschwitz community became aware that he had left without any trace and nobody knew. He simply disappeared. This dutifully quiet exit of Auschwitz left Mengele free from the looming life of imprisonment or court ordered death most other physicians and political Nazi members received during the Nuremberg trials.

After liberation, the twins felt torn leaving the camp, leaving the bombed and charred metal that had served as gas chambers where the rest of their family had fallen^{xi}. Hardly any recollection of their past life remained, so much had changed that walking through the gates toward freedom was more threatening than the frozen barracks of torture they had become so accustomed to. The desire to return to home was overwhelming, while marching in knee deep snow with nothing but the ragged prisoner clothing they knew stopping to rest was not an option. Eventually the small homemade knapsacks filled with a few crusts of bread became too heavy, as did the wool coats scavenged from the warehouses that hadn’t been burned down. Their experimented bodies, disease infected, with mutilated limbs, bleeding genitals, hazed eye sight, infection wounds and bruised arms fought death one more time; the mental strength for survival defeated all challenges made by failure.

Survivors of the Holocaust were faced with the most tragic of life events, their childhood memories swarmed with nightmares, smells of burning flesh, never-ending starvation and cold. They survived human experimentation and they recall there being

nothing human about it^{xii}. The difficulty our society is challenged with today is to understand the value of these past medical experiments. It is up to the population to determine what to do with the knowledge we have acquired due to these investigations. Is it more humane to accept what happened and use the data concluded from these experiments thereby being aware and indebted to the lives lost to torture? Or is it better to ignore the occurrence of such horrendous acts against humanity and destroy all evidence of what little remains from the historical events of experimentation?

Over seventy years ago the world was tortured watching the physicians of Europe carry out murder. They were aware of the consequences of their decisions and the trail of blood they left behind them. Their lack of medical protocol that before was so engrained in their practice left physicians as murderers. Today we must decide what we do with information history has given us, what do we do with the medical discoveries obtained from horrific means.

The historical evidence of these experiments and the voices of survivors instigated ethical procedures required and instituted in hospitals and private practices globally. No event of equal grandeur should ever occur again, but that is only due to the acceptance of the practice done by the conscious, stable physicians during World War II.

Many of the twins huddled together upon arrival at the camps and lived in crowded standards similar to those forced in labor, however, they were offered a few extra privileges and have continued to live post-war lives constantly tortured by Dr. Mengele. Aside from the experimentation these children were often given extra rations or candy after injections, examinations, or other blood testing. Twins anywhere between ages of six months and seventeen years felt guilty the rest of their life for being so greedy to take advantage of extras given to them by a man of such kind appearance but such malicious intentions, while their family members were on the other side of the fence being starved and beaten^{xiii}.

As they would walk by after going to the flower patches with bunches of bouquets in their arms or after finishing an amiable soccer game, women on the other side of the fence would cry out names, praying that one of the children walking by was theirs. The twins that survived cannot even recollect all experimentation that was done to them; the trauma so outrageous their mental strength omitted it from memory to better ensure survival. The documentation that was destroyed by the Nazis prior to the liberation of concentration camps denied the victims the privilege to help they needed, to somebody who knew what had happened and knew how to work

through the gruesome memories that haunted the survivors day in and day out.

Victims relief of survival is continually reprimanded by their swallowing grief of loss of family members, lovers, and children. The overwhelming guilt of knowing that a man who tortured and killed hundreds of children they themselves grew up with and faced torture with, was also the one who sent thousands of others directly to the gas chambers remained engrained in Holocaust survivors, no less of a reminder than the tattooed number branded on their body.

Knowledge was powerful when looking death in the face. Joe Rosenblum survived three concentration camps and mass execution repeatedly throughout his six-year death sentence proclaimed by the Nazi rule. His intelligence of innocence and purposeful idiocy saved his life repeatedly. In pretending to not understand a word of German he was allowed to clean while Dr. Mengele met with his three assistant doctors and spoke of medical experimentation as well as the war progression in general. Although he was never able to share this information to other victims suffering in the camps, it replenished his basin of hope which he used to encourage others to never let up fighting, to keep on surviving. The other essential survival tactic he used was conservation of energy by establishing less physically taxing jobs that were seen as more effective.

After working weeks on the ramp where trains of carts of new victims came in at a constant flow, he felt his body giving into exhaustion from moving limp, dead, decayed bodies and limbs dozens of feet only to lift them into carts and wagons. Fearful of death he schematically avoided the gas chambers and bodily destruction by shoveling the squished fruits and vegetables new victims arrived with and dropped in seeing the horrific gates of Auschwitz welcoming their arrival. He shoveled away the lumps of vomit, unwarranted bowel movement and urination that stained the ground and intensified the wretched smell beneath Dr. Mengele’s pristine, polished boots.

He suffered multiple operations during his time at Auschwitz, the first two were completed by doctors who spoke Hungarian and gave instruction by grunts and movements to communicate the extreme pain he would endure. Later, after the camp officials required all clothing to be dumped in a pool of chemicals to kill off disease, hundreds died from pneumonia and Joe’s sickness left his eyes no more than a thin slit, his head bursting into seemingly metal shards ripping his skull in two. A man known as Father, the second-hand man of Dr. Mengele, informed Joe of his expected arrival at the hospital the next morning. Joe worked for the underground spies which was run by

an SS officer who had a strong relationship with Father. All victims recall Father as a kind-hearted man who would risk his life talking to prisoners and children recall his soft touch and troubled eyes.

Aware that no Jews were ever operated on, Joe feared the future, death loomed ever closer as Dr. Mengele and his assistants approached Joe and took him into the operating room. After moments he was unconscious and when he woke up he could see out of one eye, anxiety stricken he quickly searched for assurance of all other limbs and genitals. Confused as to why his nearly lifeless body was left untainted, he determined his undercover work with Father must have given him the privilege to effective treatment and recovery by Dr. Mengele himself with absolutely no ties to death itself. Joe was the only Jew operated on by Dr. Mengele that was saved from illness instead of infected with it.

He recalls a day when Dr. Mengele responded to one of his assistant’s questions as to why there was a mass murder of the Jews, what the reasoning was since the Jews had never done anything to the Germans. Dr. Mengele responded that they are the smartest, they are the richest, they have made the best inventions and scientific discoveries. Well there can only be one best in the world and that must be the Germans, the only way to ensure that would be the complete elimination of the Jews^{xiv}.

Many Jews with any medical background or specific certification were spared of immediate death or slave labor and were supervised by Dr. Mengele as they completed experiments or as they healed the Gentiles and worthy slaves of the concentration camps. Rejection to orders was a sure death but implementing orders was a guaranteed death of the soul. All nationalities were represented by Jewish faith at the concentration camps, all languages, ways of life, socioeconomic statuses, the radiologists and cardiologists were torturing and killing women and children of their same faith, regardless of their race or ethnicity, because it was required by Dr. Mengele.

The faces of those they killed by following orders are forever etched in their memory, their moral compass forever broken and their souls tormented by darkness and hatred. No position or placement in the concentration camps was desired, survival was a battle not easily won. The survivors fight every day of their life, torn by decisions they made to survive, tortured by the smells of burning and decaying bodies, muted by the millions of lives they watched walk to their death crying and alone. The never-ending physical torture endured cannot associate with the immense psychological damage.

Fear and death personified in the ghosts of skeletons liberated from camps. The millions of voices stolen, the deafening silence Nazi’s instilled, the lives lost, and the masses of information received from WWII; none of it will ever balance out. How do we ensure those millions of voices are forever heard, that no silence will ever suffocate life in the same way?

Research and medical experimentation are frequently the frontier of tomorrow, the possibility of saving lives; but if humans have the power to save lives they have an equal power to take lives. What are regulations for the human mind and acceptable research premises?

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