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Observations on families of SHOAH survivors with a multi-system and trans-generational syndrome

George M Weisz*; Robert M Kaplan; Jacques D Barth

***Corresponding Author: George M Weisz**
School of Humanities, University of New England, Armidale and University of New South Wales, Sydney, NSW, Australia
Email: gmweisz1@aol.com

Abstract

The Shoah, the Holocaust of WWII remains the greatest calamity in the human history.

The millions of deaths within the Concentration camps were due either to the direct killings, diseases, freezing or starvation. It is unrealistic to expect that the memory of Survivors would fade, that the experience will remain with similar morbidity compared to the rest of the population and that the successive generations would be spared from any emotional or organic consequences.

The Syndrome resulting from the Shoah is presented in acute and chronic phases, dealing with psychology, metabolic (glucose, lipid, cardiac, bone mineral) symptoms and findings, all described in details previously by Fund et al. It is now the necessity to draw attention to the inheritance in future generations. Family examples of each system of disease are tabulated for interpretation of practitioners caring for the few remaining survivors and also their descendants within two successive generations.

Keywords

Starvation; shoah; psychology; metabolic diseases; osteoporosis.

Introduction

Did the German capitulation in May 1945 end the suffering of the survivors?

Is it reasonable to assume that after surviving death camps, survivors could remain with unaltered emotional and physical health, and that the hunger and the conditions in the camps left no permanent sequel? Indeed, recent scientific studies documented that survivors of Shoah suffer more morbidity, but nonetheless they were able to reach increased longevity, explained by an exceptional resilience [1-5].

Material and methods

Information obtained from survivors and descendants' and the available laboratory and historical documents constitute the material used for these case reports. Survivors were patients, personal friends or members of the authors' families.

The analysis of information obtained from the survivors and descendants was the method used for this essay. [* Pseudonyms' have been used to ensure confidentiality].

I. The PSYCHE within the Shoah syndrome: Psychological pathology in survivors of the Shoah has been extensively covered in the medical literature.

Our survivor's family history: Case 1: Kelly, a 23 years old woman was detained in Auschwitz from June 1944 till 28 January 1945. Whilst foraging for food next to the surrounding barbed wires, the electrocution left two scars on her chest. This non-fatal event could have occurred from humidity, rain or snow diverting the electrical currents to the ground. She survived and emigrated to Israel.

In the acute stage, it would not be difficult to accept that looking daily at her scars and the tattoo on her forearm could be a cause for psychological disturbance. Indeed, she became manic-depressive (bipolar disorder). Nonetheless, she managed her life by marrying and giving birth to a son and a daughter.

She was soon diagnosed with insulin-dependent diabetes. In her chronic stage she also suffered from hypertension and myocardial infarct. She lived to be 90-years-old, when she had a fatal cerebral event. In the next generations: son, Ben, despite a successful surgical career, suffered multiple morbidities. He suffered from a severe fear of Shoah like persecution and was treated with various antidepressant medications. He was also diagnosed with diabetes, initially insulin dependent, later on controlled with oral medication. He became hypertensive and suffered two myocardial events. In the third generation, Kelly's grand son (Neched 1) suffered from diabetes (controlled with oral medication) and hypo-thyroidism; her grand daughter (Nechda 2), had initial learning difficulties, but overcame with many years' of psychological support. The informing second generation had no knowledge of any similar pre-war pathology.

Table 1: Family with psychological symptoms

NAME	AGE and DURATION IN CAMP	PSYCHIATRIC MORBIDITY	METABOLIC AND CARDIAC MORBIDITY
Safta	12; 8 months in Auschwitz	Manic-depression, tablets	Diabetes, (insulin+ tablets); Hypertension, Myocardial infarct, CVA at 90
Ben	b. 1948, Romania, to Israel; academic	Anxiety disorder	Diabetes (insulin + tablets); Hypertension; Myocardial infarcts
Neched1	b. 1969, Israel;	Anxiety, Reached to MD	Diabetes (tablets), Thyroid disorders
Nechda2	b. Israel 1972.	Initial learning difficulties; reached to PhD	---

II. The DIABETES and Lipids within the Shoah syndrome. Alteration of glucose and lipid metabolism was considered in the literature as connected with the malnutrition in camps or in Ghettos, all in a group known as Metabolic syndrome.

Family case history no. 2: Both grand fathers (Saba 1 and Saba 2) were child survivors of the Shoah, being during the war aged 2-4 and 4-8, respectively. Their nutrition was of low quality and diminished quantity. During the war, the first (Saba 1) was deported to Asia, whilst (Saba 2),'s father was in forced labour for 4 years the family lived in an open ghetto. Post liberation, both emigrated to Israel, emerging with productive lives. Metabolic (diabetic or lipid) changes appeared for both in their fifties, Saba 1 with hypertension, Saba 2 with hypertension and coronary disease.

Their children (Ben and Bat) were with insulin resistance and diabetes, hypertension, coronary disease. Their respective grand children (Neched 1 and Neched 2) presented with glucose metabolic aberrations in early teens. No similar family pathology was known before the war.

Table 2: Familial Diabetic syndrome

Name	*Born, Duration in camp*	*Nutrition*	*Diabetes Age at Diagnosis*	*Diseases*	*Glucose mmol / L Sugar HbA1c*	*L I P I DS TG/Chol/HDL/LDL*
Saba 1	b. 1942 3 years in Siberia & DP in Europe	Under nutrition, aged 2-4	63, Type 2 Metformin BMI = 24.2	Hypertension	13.0 10.6	5.7/4.8/0.7/?
Saba 2	b. 1936 4 years in Ghetto	Under nutrition, Aged 4-8	65, insulin resistance, Diet BMI = 20.0	Hypertension coronary stent, aortic calcifications Carotid plaque	6.1 6.7	4.0/5.0/2.8/1.0
Ben	b. 1971 Australia	Normal	32, Type 1 insulin, BMI = 35.3	Hypertension	20.0 8.0	7.6/4.6/1.0/?
Bat	b. 1972 Israel	Normal	35, Insulin resistance, BMI = 21.3	Hashimoto, polycystic Ovaries	5.0 4.9	3.0/6.0/2.7/2.5
Neched 1	b. 2002 Australia	Normal	Insulin=14 BMI = 23.0	Nil	4.7 5.4	3.0/6.3/1.4/2.2
Neched 2	b. 2006 Australia	Normal	Insulin=12 BMI = 22.2	Nil	3.9 4.8	3.2/6.3/1.4/3.2

III. The cardiac disease within the Shoah syndrome. The risk of heart disease and hypertension were well established in survivors of the Holocaust.

Family case history no. 3: Jerry, born in Galicia in 1894, served and was wounded in WWI, later he studied medicine in Vienna. He married and had a son (George) born in 1937. After "the Anschluss" of Austria by Germany, he fled, reaching the Netherlands, but was arrested. He fled and remained in hiding. With a weight of 39 kg and hunger oedema, in May 1945 he was soon admitted to hospital. After his recovery, (Jerry) remarried and had two more sons, Dov b. in 1948 and Mike b. 1949. All three sons married and had children: Dov, a daughter (Aliza) b. 1975, who married and had a daughter (Lena) b. 2001 and a son (Yasha), b. in 2003. All descendents became hypertensive and a tendency for increased heart rate and thyroid dysfunction. Blood tests showed low HDL cholesterol with increased triglyceride but no diabetes. Carotid ultrasound assessment of arterial intima thickness did show in all cases an increase in thickness comparatively to the rest of the population.

The cIMT (or QIMT, quantitative intima media thickness measurements standardized with Wong protocol: Considered 0. 6 mm to be the normal average value in the population is expressed as **p-value or** percentage**.**

Table 3: Family recordings of lipid metabolism, blood pressure, EKG and Cmit values. There was no recorded similar pathology in the pre-war period.

Generation	Age at diagnosis	Weight /Height = BMI	Lipids: TG; HDL-chol	Blood pressure	EKG; Rhythm/ ischemia	Heart disease/ Carotid U/ S=cIMT
I. Jerry	KZ 1 month Weight in 1944 39 kg; At 70 hypertension	120 / 191 = 33.2	2.0/0.9	180/70	A-V block Old MI, CVA	Aortic calcification, No cIMT
II a. George	Age 70 Hypertension At age 7, Hunger Winter	75/ 179 = 23.4	3.1/0.8	160/90	Sinus Rhythm (=SR)/CVA	cIMT above p.100
II b. Dov	At 60 hypertension	95/192 =25.8	3.6/0.6	150/85	SR	cIMT above p.125
II c. Michael	At 50 hypertension	90/190 = 24.9	3.2/0.8	160/85	SR	cIMT p.100
III. Aliza	At 35 hypertension	69/178 = 21.8	4.3/0.6	150/80	SR	cIMT plaques and p.100
IVa. Lena	At 18 hypertension	69/173 = 22.4	2.1; 0.9/	145/75	SR	cIMT above p.100
IVb. Yasha	At 18 hypertension	67/173 = 20.2	1.8;1.0/	140/70	SR	cIMT slightly above p100

IV. The Bone minerals metabolism within the Shoah syndrome. The link between intrauterine and/or early adult starvation with bone mineral metabolism aberrations has been previously established:

Family case report no. 4: Miriam, born in Budapest was first incarcerated in Hungarian Tunsgram factory, she was subsequently transferred to Ravensbruck KZ and then to a forced labour camp, Leipzig. She was subjected to hard labour for over 8 months and to severe nutritional deprivation. After liberation she returned to Budapest, started a family and subsequently emigrated to Australia, where she lived till 96 years, despite obesity, thyroid problems and osteoporosis. There was no knowledge of any fracture in the pre-war period in her family.

During her lifetime, Miriam sustained several fractures and was found to have a T-score Bone density of -4.4. (normal between -1 & +1). She had three daughters, in good general health, but with low bone density and with T-scores of -3.3 -1.2 and -1.5, respectively. Intriguing was one granddaughter (aged 43), with regular menstrual cycle, but bone densitometry showing scores of T -2.5 / Z-2.1.

Table 4: Familial osteoporosis within the Shoah Syndrome

Name	Age in camp	Age at diagnosis	Nutrition	Bone density T-/Z score	Co-Morbidity
Lilach	26	61	Semi-starvation. 8 months	-4.4/-2.9	Thyroid, obesity, fractures
Daughter 1	---	55	Normal	-2.8/-1.9	Hypothyroid, obesity
Daughter 2	---	39	Normal	-3.3/-2.3	Hypothyroid
Daughter 3	---	53	Normal	-1.0/-0.2	-?
Grand daughter	---	43	Normal	-2.5/-2.1	normal-

Discussion

World history recorded some 50 million human losses at the end of WWII including 6 million Germans, 6 million Jews, and by mid-1945, leaving behind over 1 million Jewish survivors.

It is on the lives of survivors that our presentation is concentrated on. Recalling the introductory question presented above: *Is it realistic to expect that the Shoah, the greatest attack inflicted on Jews, would allow the memory of the Survivors to fade, that their morbidity would be similar to the rest of the population and that successive generations would be spared from any emotional or organic pathological consequences?*

The answer to the question is unambiguous, namely that, despite exceptional resilience, there is the expectation that psychological and physical abnormalities will develop in later lives [4-6]. Auschwitz prisoner Primo Levi, no 174517, who stated that my "*most serious disease ever was the tattoo on my hand*".

As there is no possibility of human experimentation to support the concept of Shoah or Holocaust Syndrome, only clinical observations and epidemiological studies would be the correct approach for diagnoses.

Observations on the PSYCHE aspect of the syndrome: Medical and paramedical therapists established the list of pathologies [5-12]. The symptoms were accepted as part of PTSD, following an international agreement on diagnosis on the late effect of the Shoah [3-5]. Pathologies age dependant, on the length of incarceration and the severity of hunger suffered.

For the children, whilst in the Ghetto or camps were experiencing hunger, the main effect listed was feeling of abandonment, identity problems, isolation.

The adolescents: Ages 14-16, expressed similar symptoms, some uneducated, others reaching to successes.

The adults reacted with resilience, suicide during the incarceration was comparatively less than in previous pogroms[10]. Thousands of Survivors were recorded for various psychological rather than psychopathic conditions: anxiety, depression, sleeping disturbances, concentration problems and many

other aspects. Some, like Charlotte Delbo, a French Auschwitz survivor stated: "*It took me a* long *time to overcome the lack of hygiene, to use tooth brush, clean my skin that was different skin by now or use a toilet paper*".

Their hidden symptomatology has gradually surfaced; the parallel morbidity became harder to cope with [5-7]. In the early stages, only psychological symptoms were recorded. More recently, psychiatric disorders such as schizophrenia have been found to be statistically increased in survivors' group [8], a pathology reflected also in the second and third generations. At a later stage, chemical and anatomo-pathological changes were also discovered such as methylation changes in the DNA [8] as well as MRI brain and EEG changes in the next generation [9].

In this chronic phase the intellectuals seemed to have suffered more in the camps, stated also by the Auschwitz prisoner no.1727364, the writer Jean Amery. Indeed, the **Delayed Guilt syndrome** affected intellectuals despite careers, family successes and financial rewards [9-10]. Their life was but an existence and despite successes, they found no meaning in life, and once their reached the limit of their mind, like AMERY: "*they opted for exit from life*".

Observations on the diabetic aspect of the syndrome [12-17]: Despite reduced caloric supply, the lack of insulin supply resulted either in the death, at best, to a change into T2D (type 2 diabetes) or to no diabetes. The effect of semi-starvation on the adult population would explain the disappearance of existing diabetes in prisoners and its re-appearance due to subsequent abundant nutrition [16-17].

The acute effects of starvation/incarceration were investigated in two large Ghetto Medical documents. The "*Chronicle of Ghetto Lodz*"**,** (January 1941-June 1943): the almost daily registry of morbidity and mortality found no case of diabetes in 2.5 years [15-17].

In Warsaw Ghetto: whilst doctors, hungry themselves, conducted studies on "*Hunger disease*" and there was no recorded diabetes in over 1.5 years [16,17].

A warning was issued against a rapid re-nutrition following emergence from hunger, with the body capacity able for a quick metabolic recovery, but with a parallel low cardiovascular reserve, imposing a load on cardiac function, potentially leading to congestive heart failure.

Not all survivors suffered every aspect of the metabolic syndrome. Such was the experience with 12 pregnant women: all delivered their children in KZ, and only three children developed diabetes, apart from bone abnormalities suggesting that their post-liberation re-nutrition was gradual [16]. Others carried three generational diseases.

Observations on the cardio-vascular aspect in the syndrome: Cardiovascular disease in Holocaust offspring has been noted before [4,19-23].

In the acute stages, the Warsaw Ghetto documents lead to clinical and pathological descriptions of hunger cardio-myopathy: "*heart muscle weakness".* They described the gradual cardiac dysfunction,

the saving mechanisms, namely anergic reactions: hypotension, bradycardia, prolonged circulation time, lengthened Q-T waves with lower P-waves, reduced oxygenation, reduced reaction to stimuli, oedema of legs and abdomen, oliguria, hypoventilation and shallow breathing. The autopsies found ventricular atrophy (1-3mm wall), the heart being the size of a fist, whilst histology found atrophic myocardial fibres, brown pigmentation, lipofuscein interposed or replacing myofibrils with connective tissue [16,17].

In the chronic stages, survivors' were found with altered lipid metabolism, atherosclerosis, aortic and coronary calcifications, whilst hypertension and carotid wall thickening , led to cerebral vascular events [19-23], changes not known in the pre-war period of their families.

Observations on the bone mineral aspect in the syndrome: The Famine related bone metabolism disturbance was recognised with delay compared to other metabolic components, but was eventually well documented in US, UK, Australia and Israel [5,24,25].

The effect of malnutrition leading to abnormal bone development has been accepted clinically, epidemiologically and experimentally and established the connection between hunger and osteoporosis. In the acute stage, in the Warsaw Ghetto, no cases of bone healing were recorded and metallic bone fracture fixation was abandoned [15,16].

In chronic stages, starvation *"in utero" or* in early childhood was found to lead to premature adult diseases, in particular osteomalacia and osteoporosis [24,25].

Conclusive words: No definite conclusion could be drawn from these family examples. The authors merely tried to outline the survivors' psychological and metabolic aberrations. Our limitation is the lack of statistical analysis, lack of control cohort and lack of genetic studies. Although the genetic inheritance could not be excluded, a propensity of inheritance based on epigenetic mechanism is suggested, resulting from the conditions that prevailed during incarceration [27,28].

The authors concluded that survivors' syndrome is a complex psychological and metabolic

(glucose, lipid, bone mineral) disease, the Shoah syndrome is multi-system and multi-generational. It remains for the scientists with access to data on a larger population of survivors, to verify the epidemiological value of our observations.

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Authors Information: George M Weisz[1]*; Robert M Kaplan[2]; Jacques D Barth[3]
[1]School of Humanities, University of New England, Armidale and University of New South Wales, Sydney, NSW, Australia.
[2]University of Wollongong, NSW, Australia.
[3]Department. Psycho-Cardiology, Jeremiasz Research Inst, Haarlem, The Netherlands & Dept. Cardiology, Keck School of Medicine, University of Southern California, LA, USA.

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