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ON THE VARIABILITY OF SOME DERMATOGLYPHIC "MARKERS" WITH CLINICAL IMPLICATIONS

ABSTRACT: The present study represents a synthesis of the researches of pathological dermatoglyphics developed in the latest years on subjects affected by infantile autism (67 boys and 70 girls), by epilepsy (51 boys and 51 girls), severe cardio-vascular diseases (40 boys and 55 girls) and by ocular diseases, congenitally blind ones included (100 boys and 100 girls), all coming from Moldavia, a region for which reference data of normality (collected from investigations in 100 men and 100 women) are also available.

A first observation to be made is that the high degree of somatic, physiological and neuro-psychic degeneration of several of the patients from the four samples is correlated with an increased frequency of the distortions or anomalies with severe clinical implications, whose variability from one group to another is quite limited, for those recorded at digital level, and more extended for the palmary ones. The presence of such pathological "markers" (between 3 and 9 in number in the individual print of the patients), on either one hand or, simultaneously, on both hands (comparatively with their quite rare incidence in the reference sample, and on only one – usually left – hand) led to high percentages, at group level, of the bilateral disposition of such distortions, besides a high rate of their preferential presence on one of the two hands – an aspect suggesting an extended pathological charge of the digital and palmary image in each batch, taken as a whole.

The results obtained – the first of this type recorded, as far as we know, at national level, might be further utilized as reference data in the screening procedures of precocious tracing of the 4 affections at populational level, where apparently somato-physically healthy persons may show a high risk of getting ill, as depending, on one side, on the number and pathological significance of the dermatoglyphic distortions, considered, with good reason, as real "malformative stigmas" and, on the other, on their uni- or bimanual disposition, anomalies which – at the level of collectivity, may sometimes reach close, equal or even higher percentages than those recorded by the author for the 4 maladies.

KEY WORDS: Dermatoglyphics – Markers (Distortions or abnormalities) – Epilepsy – Infantile autism – Cardio-vascular diseases (CVD) – Ocular diseases (OD)

INTRODUCTION

Viewed as the most true representations of individual, physical and psychical, both normal and pathological, characteristics, the dermatoglyphics, constituting a biological document with an immutable structure during the whole life, have the great advantage of offering to each person an absolutely individual, un-identical and totally irrepeatable – not even from parents to descendants – image. Thus, if one says today that each individual is unique in the Universe, due to the infinite number of possible genetic combinations and recombinations, and also to a high mutation frequency, such singleness is most truly expressed and most easily identified phenotypically, in the details of the epidermal papillary structures. Nevertheless, in spite of their high variability, so extended that one may

assert that, practically, on the globe one cannot find two individuals with identical papillary patterns and identical dermatoglyphic details – not even univiteline twins –, when studied at populational or group level, the dermatoglyphics offer quite a unitary picture, that may be considered a true "marker" for the human species, once known that interpopulational variability assumes only certain differences in the frequency with which the same dermatoglyphic characteristics (present in all peoples of the world) do occur at the level of areas of quite different size.

If considering the collectivities of individuals with various congenital affections, of either genetic or terathological nature, the dermatoglyphic picture of which evidences significant deviations from normality, the so-called distortions or abnormalities bearing pathological significance, and which – at the level of group – are nothing but deviations in the frequency of some of the dermatoglyphic characteristics from the values recorded in the normal populations from which the patients come, then the differences between the collectivities of affected people refer to the ratio in which such anomalies or dermatoglyphoses – seen as common to several maladies – do appear (Schauman, Milton 1976, Schauman, Opitz 1991, Țarcă, Barabolski 2003). The presence of the same distortions in most of the congenital, either hereditary or not, affections is indicative of their low specificity level, which may be explained by the intervention of certain external factors – quite variable as to their number and intensity – at the level of the uterus, during embryogenesis (Cummins, Midlo 1961, Schauman, Milton 1976).

Considering all these information, the present study synthesizes the researches of pathological dermatoglyphy developed in the past 5 years on some collectivities of individuals suffering from congenital (most of them also hereditary) maladies such as: infantile autism (the autistic syndrome), epilepsy, cardio-vascular affections including congenital malformations at this level, severe ocular diseases – born-blindness included. The 4 groups of affected individuals come from Moldavia, a region for which reference data on normality – to which the results obtained have been actually ascribed to – are available (Țarcă 1995a). The author's investigations on the 4 congenital maladies, considered from a dermatoglyphic perspective, are the first developed at national level, agreeing fully with the European and even worldwide ones (Cummins, Midlo 1961, Pospíšil *et al.* 1971, Holt, Sarah 1975, Schauman, Mayersdorf 1979, Milton *et al.* 1981, Meilă, Milea 1988, Schauman, Opitz 1991), so that the results obtained represent a major contribution to a full knowledge of the main pathological indicators (markers) for a precocious dermatoglyphic diagnosis of the 4 maladies, as well as of the ratios they attained in the Moldavian collectivities of affected people. Consequently, they might be employed as reference data in the screening methods for the 4 maladies' tracing in apparently normal somato-psychical populations, but carrying such markers (as indicators of the sickening risk), thus contributing to the elaboration of programs including preventive and prophylactic measures, which involves specialized assistance within consulting surgeries, for the premarital genetic advices and family planning.

MATERIAL AND METHODS

For the study, a total number of 534 patients have been investigated dermatoglyphically – through printing – along the years 1998–2003; out of them, 137 are children (67 boys and 70 girls) with ages between 2.5 and 18 years, with the autistic syndrome. In 36.50% of the cases under consideration, autism is associated with severe mental deficiency, the QI value being below 34, with anxiety, dyslexia and double incontinence; in 52.55% of them, the disease is accompanied by moderate mental deficiency (MMD), hypoacusy (reduced hearing) allalia and enuresis, while 10.95% of the autists showed besides MMD, crises of generalized tonico-clonic epilepsy, as well. Out of the large range of neuro-psychic disorders characterizing the autism (Arseni *et al.* 1978, Wing 1981, Bowman 1983, Meilă, Milea 1988, Uta 1997), always present in this sample under study have been retarded speech, the absence of verbal communication, the incapacity of creating and developing relations with the people around (close persons included), the refuge in a world of one's own, an inner, hermetic one, dominated by images, obsessions or feelings devoided of any real support, along with the presence of some ritual, stereotypical, repeatable actions. The symptomatic polymorphism of such a malady, as well as the multiple secondary affections accompanying it have urged the Expert Commission within the Mental Health Centre of Iassy – one of our main co-workers, to grant to about 75% of the patients the first degree of invalidity (for severe forms of disease).

The second group is formed of 102 epileptic children (51 boys and 51 girls) with ages between 2 and 17 years. Out of them, 36 (21 boys and 15 girls), manifest idiopathic comitial crises of still unknown cause; in 34 (17 boys and 17 girls), the epilepsy is accompanied by other severe affections such as: chronic infantile encephalopathy, severe mental deficiency, spastic or flaccid tetraplegia, paraplegia, ocular and cardiac affections; 26 of the affected ones (8 boys and 18 girls) show family epilepsy, while in 6 cases, the epileptic seizures have a post-traumatic or post-meningeal cause. In 96 of the 102 epileptic children, the crises began at ages between 2 and 6 months, as repeated convulsions amplified in time, up to the form of generalized tonico-clonic epilepsy – G.M, which manifests itself twice a week, even under treatment. In the last 6 children from the group under study, the crises initiated during the peri-puberal period, directly in their generalized form or G.M. seizures.

The third group includes 200 subjects (100 men and 100 women) of all ages, with severe ocular affections, half of them born-blind, the remaining ones having:

shortsightedness, myopic coroydosis, ambliopy, pigmentary optical atrophy, congenital aniridy, albinism, etc. The author's investigation on the existence or not, of such grave affections in the ascendance of the affected ones' family or of their collateral relatives put into evidence that most of them, blindness included, are congenital and hereditary, some of them (short-sightedness, cataract, albinism) being even family diseases.

Finally, the last sample includes 95 subjects (40 males and 55 females) of all ages, with grave cardio-vascular affections, out of which more than a half are children with congenital heart malformations, either isolated or combined, such as: septal auricular, ventricular or atrio-ventricular defects, mitral aortic or pulmonary stenosis, aorta coarctation, Fallot Tetralogy or Pentalogy, transposition of the large vessels, the remaining ones being adults with arterial hypo- or hyper tension installed before the age of 40, ischemic cardiopathy with or without fibrillations, as well as a few cases of chronic lymphocytic or mielocytic leukaemia.

As in the case of autists, many of the patients included in the last 3 groups of maladies show a high degree of invalidity, which is correlated – as shown in the following – with an ample pathological charge of their dermatoglyphic picture.

Taking over of the 2,136 finger prints (1,068 digital and 1,068 palmary) from the patients of the 4 groups of maladies was mainly performed at the Mental Health Centre of Iassy – our collaborator since 1990 – a place where all handicapped persons (younger than 18) have to come for the establishment of their invalidity degree, as well as for the issuing or prolongation (if such be the case) of the Handicap Certificate. In the case of ocular affections and blindness, for getting a numerically – well-represented batch, the author contacted the special schools for Blind People from both the city and county of Iassy, and also the Invalids' Associations of the same region.

For the reference batch (100 men and 100 women) – to which the results obtained have been ascribed –, the necessary data had been taken over from the author's Ph.D. thesis (Țarcă 1995a), which includes – among the 3 main provinces of the country, studied from a dermatoglyphic perspective – Moldavia's territory, from where all 4 groups of affected people come.

The analysis of the dermatoglyphic markers with medical implications, and of their variability in the 4 maladies, considered not only the average ratios recorded by each one comparatively with the whole group, but also the disposition of such anomalies as a function of sex, laterality, fingers and palm's compartments, all these aspects completing their pathological picture from a dermatoglyphic perspective.

The working methods employed are the classical ones (Cummins, Midlo 1961, Schauman, Milton 1976, Țurai, Leonida 1979) however improved with the new methodologies applied in studies of pathological dermatoglyphy (David 1973, Schauman, Mayersdorf 1979, Milton *et al.* 1981, Meilă, Milea 1988, Schauman, Opitz 1991).

RESULTS AND DISCUSSION

A first, general observation to be made is that, in all the 4 maladies taken into study, the same distortions or dermatoglyphic anomalies (at both digital and palmary level) are present as "markers", bearing important clinical significance, the difference among the samples referring only to the frequency with which such abnormalities, the variability of which was seen as quite limited for the digital ones and somehow larger for the palmary ones, occur.

Another observation is that the distribution of the distortions, evidenced as a function of sex, laterality, on either fingers or palm's compartments follows – in all groups –, with only a few exceptions – the same tendency in their succession, in decreasing order of the frequency recorded, along with some important reversions from normality – which complete and, to an equal extent, amplify the pathological charge of the affected persons' digito-palmary picture.

In the following, the main dermatoglyphic distortions noticed at the level of the digital and palmary picture, in the 4 groups of patients, will be represented, along with their incidence both on each sample, and differentiated for the two sexes, and on the two hands, as well as the succession of their distribution on both fingers and in palm's compartments.

Digital dermatoglyphic distortions

A first deviation from the behaviour of the reference group from which the affected people come refers to the *considerable increase of arches' frequency (A)*, a model which is generally the most weakly numerically represented (2–5%), in any population and which, in our case, varies between a minimum value of 9.80% in subjects affected by severe ocular diseases (OD), and a maximum of 13.03% in epileptics. The patients suffering from infantile autism or grave cardio-vascular diseases (CVD) evidence, from this point of view, practically equal percent values (around 10.30%). Apart from few, insignificant exceptions, in all the 4 maladies (*Table 1*), the arches are more frequently met with in the feminine series and on the left hands of the subjects of both sexes – a similar situation with that of the reference group, yet, unlike here, where A attain almost double percent values in women, comparatively with men, and on the left hands, in the four groups of patients, the sexual, as well as the bilateral differences are considerably diminished, which is a peculiarity frequently reported in other groups of patients, too (Cummins, Midlo 1961, Pospíšil *et al.* 1971, Țurai, Leonida 1979, Milton *et al.* 1981, Meilă, Milea 1988, Schauman, Opitz 1991, Țarcă 1996, Țarcă 1998, Țarcă 2001).

TABLE 1. Comparative data on the frequency of digital dermatoglyphic anomalies (distortions).

Digital distortions	Samples of affected subjects and the reference batch	%	Sexual differences	Bimanual differences	Distribution on the fingers
A on total fingers	Epilepsy	13.03	F≥B	S ≥ D	II=III>IV>I>V
	Infantile autism	10.29	B≥F	S>D	II>III>I>V>IV
	Cardio-vascular diseases	10.31	F>B	S≥D	II>III>I>V>IV
	Ocular diseases	9.80	F>B	S≥D	II>III>V>I>IV
	Reference sample	**3.70**	**F>B**	**S>D**	**II>III>V>IV>I**
L on total fingers	Epilepsy	56.57	B≥F	S≥D	V>III>IV>I>II
	Infantile autism	60.44	B≥F	D>S	V>III>II>IV>I
	Cardio-vascular diseases	57.30	F≥B	S>D	V>III>I>II>IV
	Ocular diseases	56.40	B>F	S>D	V>III>I>IV>II
	Reference sample	**71.00**	**F>B**	**S>D**	**V>III>I>IV>II**
Racketoid loops	Epilepsy	6.66	F=B	D≥S	IV>V>I≥II>III
	Infantile autism	9.19	F>B	D≥S	IV>V>II>III>I
	Cardio-vascular diseases	7.05	B>F	S>D	IV>V>II>III>I
	Ocular diseases	5.05	F>B	S>D	IV>V>III>II>I
	Reference sample	–	–	–	–
Radiality of digital structures	Epilepsy	12.35	B≥F	D≥S	II>III>IV>I>V
	Infantile autism	7.35	F≥B	S>D	II>III>IV≥I>V
	Cardio-vascular diseases	11.05	B>F	S≥D	II>IV>I>III>V
	Ocular diseases	9.40	B≥F	D≥S	II>IV>I>III>V
	Reference sample	**2.85**	**B>F**	**D>S**	**II>III>V>I>IV**

As to the distribution of frequency A on the 5 cumulated fingers (*Table 1*), in decreasing order of its value, it is to be observed that all 4 maladies maintain the classical succession of the reference sample exclusively for the first two positions of the classical succession, which indicates a majoritary occurrence of this pattern on fingers II and III. Nevertheless, for the following 3 positions, important reversions from normality – the clinical implications of which are well-known – should be mentioned (David 1973, Schauman, Milton 1976, Țurai, Leonida 1979, Țarcă 2001).

The increase of arches' frequency, in all series of affected patients, occurs, above all, at the expense of loops (L), the diminished weight of which varies between 56.40% in OD and 60.44% in infantile autism, comparatively with the ratio recorded for the reference group of Moldavia – of 71.00%.

As in the case of A, too, the same *diminution of the sexual differences for L* should be mentioned and even a tendency towards higher percent values in boys instead of girls – as it is the normal case or the case of other Romanian (Țarcă 1995a) and Europoid populations (Cummins, Midlo 1961), the CVD affected patients excepted.

The distribution of L as a function of hand (the autists excepted) agrees with the well-known classical tendency which assumes a higher incidence of theirs on the left hands, for both sexes.

The repartition of L on the 5 fingers occurs in all the 4 groups of patients, thus agreeing with that recorded in normal populations, especially for the first two positions in the diagram, assuming majority values of theirs on fingers V and III, some significant reversions being evidenced especially for positions 3 and 4 of the classical scheme while, for autists and CVD affected subjects, even the last position 5 should be considered.

A digital marker with important medical significances for the carriers (David 1973, Schauman Opitz 1991, Țarcă 1998, Țarcă 2000, Țarcă 2001, Țarcă, Barabolski 2002, Țarcă, Barabolski 2003), present in all the 4 affections, yet absent in the reference sample, is the *racket-shaped loop or the racketoid-type loop,* the frequency of which varies between 5.05% in OD and 9.19% in infantile autism. In these affections, the racketoid loop is more frequently met in the feminine series, while in CVD, on the contrary, in the masculine ones; in epileptics, it is to be found, in equal ratios, for the two sexes. *Table 1* also permits the observation that, in the group of patients affected by CVD and OD, this rare formation is more frequently met on the left hands, while in the two neuro-psychic diseases – autism and epilepsy – it has the tendency of being distributed more on the patients' right hands, yet without being much differentiated from the left ones. Out of the 5 fingers, the higher frequency for the racketoid loop is in all cases noticed on fingers IV and V, followed, in decreasing order of its value, by fingers II, III or III–II and, in the last case, on I – with the exception of the group of epileptics – with which the last position in the classical scheme is held by finger III and the third position by finger I – a reversion mainly present in patients affected by tonio-clonic generalized epilepsy G.M.

A digital dermatoglyphic "marker" whose clinical implications may be compared with those induced by changing of the internal organs' position – quite rarely met in the reference sample (2.85%), yet present in all relatively high percent values in all the 4 maladies – refers

TABLE 2. Comparative data on the percent distribution of the real patterns in all palm's compartments.

Affection and the reference sample	Sex	Hp			Th/I			Th/II			Th/III			Th/IV		
		L	R	L + R	L	R	L + R	L	R	L + R	L	R	L + R	L	R	L + R
Epilepsy (N = 102)	**M**	21.6	35.3	28.4	11.8	5.9	8.9	1.9	3.9	2.9	25.5	47.1	36.2	37.2	21.6	29.4
	F	27.4	31.3	29.4	1.9	1.9	1.9	–	1.9	0.9	7.9	37.2	22.5	37.2	23.5	30.4
	T	24.5	33.3	**28.9**	6.9	3.9	**5.4**	0.9	2.9	**1.9**	16.7	42.2	**29.4**	37.2	22.5	**30.0**
Infantile autism (N = 137)	**M**	20.9	32.8	26.9	7.5	3.0	5.2	3.0	3.0	3.0	14.9	38.8	26.9	49.2	32.8	41.0
	F	35.7	40.0	37.9	2.9	1.4	2.1	–	–	–	10.0	32.9	21.4	48.6	38.5	43.5
	T	28.4	36.5	**32.5**	5.1	2.2	**3.7**	1.5	1.5	**1.5**	12.4	35.7	**24.1**	48.9	35.8	**42.3**
Cardio-vascular diseases (N = 95)	**M**	37.5	52.5	45.0	2.5	2.5	2.5	2.5	7.5	5.0	10.0	42.5	26.2	42.5	30.0	36.2
	F	29.1	41.9	35.4	10.9	7.3	9.1	–	–	–	12.7	36.4	24.5	43.6	29.1	36.6
	T	32.6	46.3	**39.4**	7.4	5.3	**6.3**	1.5	3.2	**2.5**	11.6	38.9	**25.3**	43.2	29.5	**36.3**
Ocular diseases (N = 200)	**M**	30.0	37.0	33.5	4.0	1.0	2.5	–	5.0	2.5	15.0	48.0	31.5	47.0	35.0	41.0
	F	28.0	37.0	32.5	6.0	3.0	4.5	3.0	6.0	4.5	18.0	46.0	32.0	54.0	38.0	46.0
	T	29.0	37.0	**33.0**	5.0	2.0	**3.5**	1.5	5.5	**3.5**	16.5	47.0	**31.7**	50.5	36.5	**43.5**
Reference sample (N = 200)	**M**	29.1	35.9	32.5	15.7	8.2	12.0	1.4	3.8	2.6	22.2	52.0	37.1	54.5	43.8	48.9
	F	35.0	35.3	35.2	8.5	4.0	6.2	0.3	2.7	1.5	23.8	46.2	35.0	55.8	40.9	48.3
	T	32.1	35.7	**33.9**	12.1	6.1	**9.1**	0.9	3.2	**2.0**	23.0	49.1	**36.1**	54.9	42.3	**48.6**

TABLE 3. Percent distribution, according to hand and sex, of the main palmary formulae.

Affections and the reference sample	Sex	Hand	11 – 9 – 7 11 – x – 7 11 – 0 – 7	9 – 7 – 5 9 – x – 5 9 – 0 – 5	7 – 5 – 5 7 – x – 5 7 – 0 – 5	Other formulae
Epilepsy (N = 102)	M (N = 51)	L	54.90	15.68	13.72	15.68
		R	64.70	15.68	–	19.60
		L + R	59.80	15.68	6.86	17.64
	F (N = 51)	L	37.25	31.37	13.72	17.65
		R	66.66	17.64	1.96	13.72
		L + R	51.96	24.51	7.84	15.68
Infantile autism (N = 137)	M (N = 67)	L	35.82	28.36	13.43	22.39
		R	62.68	14.92	8.95	13.43
		L + R	49.25	21.64	11.19	17.91
	F (N = 70)	L	30.00	34.28	12.86	22.86
		R	52.86	21.43	4.28	21.43
		L + R	41.43	27.85	8.57	22.14
Cardio-vascular diseases (congenital malformations included) (N = 95)	M (N = 40)	L	35.00	27.50	15.00	22.50
		R	67.50	10.00	–	22.50
		L + R	51.25	18.75	7.50	22.50
	F (N = 55)	L	23.64	32.73	5.45	38.18
		R	45.45	23.64	1.82	29.09
		L + R	34.54	28.18	3.64	33.64
Ocular diseases (congenital blindness included) (N = 200)	M (N = 100)	L	38.00	36.00	9.00	17.00
		R	70.00	12.00	5.00	13.00
		L + R	54.00	24.00	7.00	15.00
	F (N = 100)	L	34.00	28.00	19.00	19.00
		R	54.00	20.00	9.00	17.00
		L + R	44.00	24.00	14.00	18.00
Reference sample (N = 200)	M (N = 100)	L	23.29	37.33	23.97	15.41
		R	42.46	28.08	17.81	11.64
		L + R	32.87	32.70	20.89	13.53
	F (N = 100)	L	28.81	35.71	20.41	14.96
		R	48.64	27.55	14.28	9.52
		L + R	38.77	31.63	17.34	12.24

to the *radial orientation of the digital patterns taken as a whole (A+L+W)*. Its variability ranges between a minimum value of 7.35%, in infantile autism, and a maximum of 12.35% in epilepsy, quite high percent values being recorded for patients with CVD (11.05) or OD (9.40). If, in the reference group, digital patterns' radiality is of majority in men and on the right hands of subjects of both sexes, in the series of affected people under study (the autists excepted), the sexual and bilateral differences are much more reduced, even if a tendency similar to that of the normal people is manifested, up to becoming almost equal, a peculiarity actually recognized as one of the dermatoglyphic markers with several clinical implications (Schauman, Milton 1976, Țurai, Leonida 1979, Milton *et al.* 1981, Meilă, Milea 1988, Schauman, Opitz 1991, Țarcă 1995b, Țarcă 1996, Țarcă 1998). To this, one should add *significant reversions in the succession, on the fingers, of radiality*. Indeed, as resulting from *Table 1*, a certain prevalence of this orientation on fingers II and III (as in the reference sample, too) is to be found only in autists and epileptics. In patients affected by CVD and OD, the second position in the classical formula is occupied by finger IV, followed by finger I, positions on which the radial orientation generally indicates severe pathological significance and, consequently, a higher risk of deeper malformative effects on their carriers (David 1973, Schauman, Milton 1976, Țurai, Leonida 1979, Schauman, Opitz 1991).

Palmary dermatoglyphic distortions

A more extended range of dermatoglyphic distortions, with multiple malformative effects, has been provided by the palmary picture of the 4 groups of affected people. The first one, of a more general character and more weakly evidenced in epileptics, refers to the *change of the classical succession of the distribution of patterns' frequency in palm's 5 compartments* which, in patients affected by the autistic syndrome and OD, assumes placement of the Hypothenary area (Hp) in the second position of the classical formula: IV>Hp>III>Th/I>II while, in CVD affected patients, the presence of the same Hp areal is in the formula's first position: Hp>IV>III>Th/I>II, instead of 3: IV>III>Hp>Th/I>II; such distortions had been also reported for other European groups suffering from the same affections (David 1973, Schauman, Milton 1976, Milton *et al.* 1981, Bowman 1983, Meilă, Milea 1988, Schauman, Opitz 1991, Țarcă 1996).

TABLE 4. Percent distribution, according to hand and sex, of the modal types of line D.

Affections and the reference sample	Sex	Hand	Modal type 11 (11+12+13)	Modal type 9 (9+10)	Modal type 7 (6+7+x)	Absence of D line "0"
Epilepsy (N = 102)	**M (N = 51)**	**L**	60.78	23.53	15.68	–
		R	72.55	21.57	5.88	–
		L + R	66.66	22.55	10.78	–
	F (N = 51)	**L**	41.17	37.25	21.57	–
		R	66.66	21.56	11.76	–
		L + R	53.92	29.41	16.66	–
Infantile autism (N = 137)	**M (N = 67)**	**L**	38.80	37.31	23.88	–
		R	65.67	20.89	13.43	–
		L + R	52.24	29.10	18.65	–
	F (N = 70)	**L**	31.42	40.00	28.57	–
		R	55.71	25.71	18.57	–
		L + R	43.57	32.86	23.57	–
Cardio-vascular diseases (N = 95)	**M (N = 40)**	**L**	37.50	40.00	20.00	2.50
		R	65.00	22.50	12.50	–
		L + R	51.25	31.25	16.25	1.25
	F (N = 55)	**L**	30.91	43.64	25.45	–
		R	36.36	41.82	21.82	–
		L + R	33.64	42.72	23.64	–
Ocular diseases (N = 200)	**M (N = 100)**	**L**	39.00	42.00	18.00	1.00
		R	56.00	32.00	11.00	1.00
		L + R	47.50	37.00	14.50	1.00
	F (N = 100)	**L**	33.00	42.00	24.00	1.00
		R	52.00	30.00	16.00	2.00
		L + R	42.50	36.00	20.00	1.50
Reference sample (N = 200)	**M (N = 100)**	**L**	28.08	46.23	25.68	–
		R	47.94	35.61	16.44	–
		L + R	38.01	40.92	21.06	–
	F (N = 100)	**L**	32.65	45.92	21.43	–
		R	52.04	32.99	14.96	–
		L + R	42.34	39.45	18.20	–

In all the above-mentioned cases, Hp's placing on the second or first position in the classical scheme is due to the sensible diminution of the frequencies of the patterns from the interdigital space III (*Table 2*), which, in its turn, had been determined, as it will be explained in the following, by the significant increase of the cases in which line C's direction had been suppressed partially (Cx) or totally (Co), a distortion registered in most numerous and most severe genetic and terathological maladies, be them skeletal, organic or neuropsychic (David 1973, Schauman, Milton 1976, Țurai, Leonida 1979, Schauman, Opitz 1991, Țarcă 1995).

A second very important deviation from normality, referring to the palmary picture in its whole, refers to the *generalized line of the papillary ridges, as estimated by the main palmary formulae* (11–9–7 = cross line or transversal line ridges 9–7–5 = intermediary line and 7–5–5 = oblique line); *by the modal types of line D* (modal type 11 = transversal direction; modal type 9 = intermediary direction and modal type 7 = oblique direction) and *finally by the modal types of line A* (modal type 5 = transversal orientation; modal type 3 = intermediary orientation and modal type 1 = oblique orientation), whose frequency as a function of hand and sex for the 4 groups of patients, as well as for the reference sample, is listed in *Tables 3* to *5*. As seen from these tables, for all affected patients, the tendency towards a more transverse alignment of ridges (which is always of majority as to its frequency – as illustrated in formulas 11–9–7, modal type 11 and modal type 5, is to be met more frequently with boys instead of girls, while the intermediary direction (expressed by formula 9–7–5, modal type 9 and modal type 3) and the oblique one (illustrated by formula 7–5–5, modal type 7 and modal type 1) is, on the contrary, more frequent in girls than in boys, which is to be noticed in all Romanian and Europoid populations, our reference group included. Such a reversion from the classical line of the sexual dimorphism for the sloping of palm's ridges, present in all 4 maladies under study, represents one of the palmary dermatoglyphic "markers" bearing medical significance at populational level. As to the sloping of the palmary ridges as a function of laterality (hand), the results obtained evidenced, in all cases, a behaviour similar to that of the reference sample, which assumes a more pronounced transversality on the right palms and an intermediary to oblique leaning on the left palms – a peculiarity to be found out in all severe congenital affections (Pospíšil *et al.* 1971, David 1973, Schauman, Milton 1976, Țurai, Leonida 1979,

TABLE 5. Percent distribution, according to hand and sex, of the modal types of line A.

Affection and the reference sample	Sex	Hand	Modal type 5 (5+6+7)	Modal type 3 (3+4)	Modal type 1 (1+2)	Absence of A line "0"
Epilepsy (N = 102)	M (N = 51)	L	70.58	19.61	9.80	–
		R	80.39	13.72	5.88	–
		L + R	75.49	16.66	7.84	–
	F (N = 51)	L	60.78	23.53	15.68	–
		R	78.43	7.84	13.72	–
		L + R	69.60	15.68	14.70	–
Infantile autism (N = 137)	M (N = 67)	L	56.71	19.40	23.88	–
		R	80.59	10.45	8.95	–
		L + R	68.65	14.92	16.42	–
	F (N = 70)	L	54.28	32.86	12.86	–
		R	77.14	14.28	8.57	–
		L + R	65.71	23.57	10.71	–
Cardio-vascular diseases (N = 95)	M (N = 40)	L	47.27	38.18	14.54	–
		R	74.54	23.64	1.82	–
		L + R	60.91	30.91	8.18	–
	F (N = 55)	L	42.50	37.50	20.00	–
		R	57.50	32.50	10.00	–
		L + R	50.00	35.00	15.00	–
Ocular diseases (N = 200)	M (N = 100)	L	52.00	27.00	18.00	–
		R	81.00	10.00	3.00	–
		L + R	66.50	18.50	10.50	–
	F (N = 100)	L	52.00	30.00	20.00	1.00
		R	83.00	16.00	7.00	–
		L + R	67.50	23.00	13.50	0.50
Reference sample (N = 200)	M (N = 100)	L	33.42	51.70	14.62	–
		R	72.84	26.11	1.04	–
		L + R	53.13	38.90	7.83	–
	F (N = 100)	L	73.14	19.66	7.19	–
		R	87.53	11.75	0.72	–
		L + R	80.33	15.71	3.95	–

Schauman, Opitz 1991, Șelaru 1994, Țarcă 1998, Țarcă 2000), which is indicative of the detachment of the groups of affected people off a population characterized by a more or less normal dermatoglyphic structure. One may observe from *Table 3* that, for all the 4 maladies – CVD and autism especially – a higher frequency, comparatively with the normal values, of other formulae, instead of the 3 main ones, is to be noticed, which suggests a disordered direction of palm's papillary ridges, so frequently observed in other severe genetic or terathological diseases, too (Schauman, Milton 1976, Schauman, Opitz 1991), which confers to the palm its loaded, laced aspect.

With the exception of epileptics, in which such "other formulae" are more frequently occurring in boys than in girls (as it is the case of the reference sample), in the remaining affected patients under study they are prevalent in the series of girls and, preferably, on the left hands of both sexes.

However, to these general distortions, another 10 should be added, as evidenced at the level of some of palm's compartments, the percent distribution of which in the 4 groups of affected people is given, as a function of sex, laterality and viewed comparatively with the reference sample in *Table 6*. Most of these anomalies are occurring in the Hypothenar (Hp) area. The first one refers to *a higher incidence, comparatively with normal cases, of the radially-oriented arch (A^R)*, which is a formation extremely rarely met in normal people (0–2.5%) yet quasi-present in most of the congenital diseases (Cummins, Midlo 1961, David 1973, Schauman, Milton 1976, Schauman, Opitz 1991). Occurring in low ratios in autists (2.90%) and epileptics (1.96%) but in quite high ones – comparatively with the reference sample – in CVD (12.10%) and OD affected people (4.25%), the A^R from Hp is more frequently seen with affected boys (autists excepted) and, in all cases, predominantly on the right hands. Out of the 4 groups of affected people, the subjects suffering from CVD show the highest percent values for A^R (20.0% with boys and, respectively, 12.72% with girls, on the right hands, and 12.5% and, respectively, 5.45% on the left ones).

Another ridge formation, equally rarely met in normal populations as the A^R (0–2.5%), and which, in the case under consideration, records values much higher than those of the reference group in Moldavia (1.75% on the average) is the *loop with ulnar direction (L^U)*, a quite frequent model in other severe maladies, as well (Cummins, Midlo 1961, David 1973, Schauman, Milton 1976, Țurai, Leonida 1979, Meilă, Milea 1988, Schauman, Opitz 1991), carrying multiple pathological significances. The highest average percentage for L^U is recorded in patients suffering from OD (12.75%) and CVD (12.63%), followed, in decreasing

TABLE 6. Comparative data on percent distribution, according to hand and sex, of palmary dermatoglyphic anomalies.

Anomalies	Diseases	Boys			Girls			Total		
		L	R	L+R	L	R	L+R	L	R	L+R
A^R in Hp	Epilepsy	1.96	3.92	2.94	1.96	–	0.98	1.96	1.96	1.96
	Infantile autism	–	4.47	2.23	–	7.14	3.57	–	5.80	2.90
	CVD	12.50	20.00	16.25	5.45	12.72	9.08	8.42	15.79	12.10
	Ocular diseases	3.00	7.00	5.00	2.00	5.00	3.50	2.50	6.00	4.25
	Reference sample	**–**	**1.00**	**0.50**	**–**	**1.00**	**0.50**	**–**	**1.00**	**0.50**
L^U in Hp	Epilepsy	1.96	7.84	4.90	5.88	5.88	5.88	3.92	6.86	5.39
	Infantile autism	8.95	13.43	11.19	10.00	5.71	7.85	9.49	9.49	9.49
	CVD	15.00	20.00	17.50	7.27	10.91	9.09	10.53	14.74	12.63
	Ocular diseases	15.00	11.00	13.00	8.00	13.00	10.50	13.50	12.00	12.75
	Reference sample	**1.00**	**2.00**	**1.50**	**3.00**	**1.00**	**2.00**	**2.00**	**1.50**	**1.75**
tt'.tt't" etc. (Hp)	Epilepsy	17.64	21.57	19.60	23.53	25.49	24.51	20.58	23.53	22.05
	Infantile autism	22.39	32.83	27.61	32.86	40.00	36.43	27.74	36.49	32.11
	CVD	30.00	47.50	38.75	21.82	41.82	31.82	25.26	44.21	34.73
	Ocular diseases	27.00	35.00	31.00	25.00	35.00	30.00	26.00	35.00	30.50
	Reference sample	**15.00**	**16.00**	**15.50**	**16.00**	**17.00**	**16.50**	**15.50**	**16.50**	**15.75**
t_0 (Hp)	Epilepsy	7.84	3.92	5.88	5.88	3.92	4.90	6.86	3.92	5.39
	Infantile autism	2.98	–	1.49	10.00	4.28	7.14	6.56	2.19	4.37
	CVD	–	–	–	1.82	1.82	1.82	0.91	0.91	0.91
	Ocular diseases	–	1.00	0.50	1.00	1.00	1.00	0.50	1.00	0.75
	Reference sample	–	–	–	–	–	–	–	–	–
T_{11} and T_{12} instead of T_{13} (Hp)	Epilepsy	25.49	17.64	21.06	39.21	23.53	31.37	32.35	20.59	26.47
	Infantile autism	41.79	22.39	32.09	30.00	27.14	28.57	35.77	24.82	30.29
	CVD	32.50	35.00	33.75	34.54	20.00	27.27	33.68	26.31	30.00
	Ocular diseases	25.00	3.00	14.00	23.00	15.00	19.00	24.00	9.00	16.50
	Reference sample	**5.00**	**2.00**	**3.50**	**7.00**	**4.00**	**5.50**	**6.00**	**3.00**	**4.50**
The dense or very dense network in Th/I	Epilepsy	29.41	37.25	31.08	58.82	58.82	58.82	44.11	48.03	46.07
	Infantile autism	29.95	29.85	29.85	61.43	55.71	58.57	45.98	43.06	44.52
	CVD	30.00	32.50	31.25	43.64	40.00	42.32	37.89	36.84	37.36
	Ocular diseases	21.00	26.00	23.50	56.00	60.00	58.00	38.50	43.00	40.75
	Reference sample	**3.00**	**5.00**	**4.00**	**5.00**	**7.00**	**6.00**	**4.00**	**6.00**	**5.00**
a–b distance<21 mm in F and 24 mm in M	Epilepsy	58.82	82.35	70.58	39.21	50.98	45.09	49.02	66.66	57.84
	Infantile autism	61.19	67.16	64.17	55.71	57.14	56.42	58.39	62.04	60.22
	CVD	52.50	52.50	52.50	30.91	29.10	30.01	40.00	38.95	39.47
	Ocular diseases	48.00	59.00	53.05	23.00	27.00	25.00	35.50	43.00	39.25
	Reference sample	**11.00**	**13.00**	**12.00**	**9.00**	**12.0**	**10.50**	**10.0**	**12.50**	**11.25**
Cx	Epilepsy	41.17	25.49	33.33	45.10	37.25	41.17	43.13	31.37	37.25
	Infantile autism	37.31	35.82	36.56	32.86	27.14	30.00	35.03	31.38	33.20
	CVD	50.00	27.50	38.75	30.91	14.54	22.72	38.95	20.00	29.47
	Ocular diseases	41.00	28.00	34.50	26.00	16.00	21.00	33.50	22.00	27.75
	Reference sample	**14.00**	**8.00**	**11.00**	**7.00**	**3.00**	**5.00**	**10.50**	**5.50**	**8.00**
Co	Epilepsy	7.84	9.80	8.82	17.65	9.80	13.72	12.74	9.80	11.27
	Infantile autism	5.97	4.47	5.22	11.43	8.57	10.00	8.76	6.56	7.66
	CVD	10.00	7.50	8.75	3.64	12.73	8.23	6.31	10.53	8.42
	Ocular diseases	13.00	8.00	10.50	18.00	10.00	14.00	15.50	9.00	12.25
	Reference sample	**3.00**	**2.00**	**2.50**	**5.00**	**2.00**	**3.50**	**4.00**	**2.00**	**2.00**
Transverse palmary sulcus (Simian Line)	Epilepsy	7.83	3.92	5.87	–	2.94	1.47	3.92	3.43	3.67
	Infantile autism	11.94	11.94	11.94	10.00	6.43	8.26	10.95	9.18	10.06
	CVD	2.50	2.50	2.50	12.73	3.64	8.18	7.11	3.07	5.34
	Ocular diseases	5.00	4.00	4.50	6.00	2.00	4.00	5.50	3.00	4.25
	Reference sample	**3.00**	**1.00**	**2.00**	**1.00**	**1.00**	**1.00**	**2.00**	**1.00**	**1.50**

order of the value, by autists (9.49%) and epileptics (5.39%). One may observe from *Table 6* that L^U is – similarly to the case of A^R – more frequent in boys than in girls (with the exception of the epileptics' group), and usually on the right hands of patients of both sexes – with the exception of autistic girls and OD suffering boys, for whom the left palms evidence higher ratios of this rare formation.

At the level of the same Hp area of the palm, a higher than double incidence is to be recorded, comparatively with the normal cases, for the presence, in the same palm, of 2, 3, or 4 triradia, of which at least one is distally displaced to the centre of the palm (t" or t"') or situated towards palm's ulnar border. The average percent of this distortion, having severe and multiple pathological significances, ranges between a minimum of 22.05% in epileptics and a maximum of 34.73% in subjects affected by CVD. In the two neuropsychic maladies (epilepsy and autism), such anomaly is more frequent in the series of girls while, in the case of CVD and OD, on the contrary, in the series of boys; nevertheless, in all cases, higher ratios are to be recorded on patients' right palms, similarly with the case of A^R (*Table 6*).

A distortion usually absent not only in normal populations (the reference sample included) but also in some severe maladies, yet present in the case under study – especially in epilepsy and autism and on the left hands of patients of both sexes – refers to *the absence, in the palm, of the axial triradius "t"*, noted by the author as t_0. In the series of autists, this severe anomaly records higher percentages in girls (7.14% *versus* only 1.49% in boys) while, with the series of epileptics, on the contrary, it is the boys that evidence higher values (5.88% *versus* 4.90% in girls), in both maladies, however, being more frequent on the left hands, with both boys and girls.

The last anomaly occurring at the level of palm's Hp – again, in affected people – refers to the *finalization of line T's direction (which starts from the axial triradius "t") in palm's fields 11 and 12 instead of 13* – as usually observed, in more than 90% of the cases, in normal populations (Cummins, Midlo 1961, Țurai, Leonida 1979, Țarcă 1995) the reference sample included. In the series taken into study, this distortion varies between a minimum of 18.50% in OD and a maximum of 30.29% in the series of autists, at quite close values with those recorded for CVD (30.0%) and epilepsy (26.47%) affected patients. In epilepsy and OD it is more frequent in girls while, in autism and CVD in boys; apart from only one exception (i.e. CVD affected boys) T_{11} and T_{12} are prevailing on patients' left palms.

A palmary distortion which differentiates, in a conclusive manner, all the 4 batches of affected from the normal ones, refers to the *disposition of the epidermal papillary ridges of the Thenar (Th/I) area as a dense and very dense network instead of their curving towards finger I (radially).* Present in the reference group as an average rate of only 5%, this anomaly, referring to Th/I ridges' curving, attains in the series of affected patients percent values between 37.36% in CVD and 46.07% in epilepsy, the latter one being closer to autists (44.52%), while the OD patients are seen as closer to the CVD affected ones (*Table 6*). Out of the two sexes, in all cases the girls evidence much higher percentages than the boys, the observed values fluctuating between 42.32% in girls with CVD and 58.82% in girls with epilepsy, comparatively with only 23.50% – values recorded for OD affected boys and, respectively 31.5% – for CVD affected boys. With only a few exceptions (*Table 6*), the dense and very dense network of Th/I ridges is more frequent on the left palms – in the feminine series – and, respectively, on the right ones – in the series of affected males, the latter maintaining the tendency noticed in the reference group from Moldavia.

In the *interdigital space II*, delimitated by triradii a and b, placed at the basis of fingers II and, respectively, III, *a considerable diminution of the interdigital interval between the two triradia, a and b much under the normal average values recorded in Romanian populations, i.e., of 21 mm in girls and 24 mm in boys*, is to be mentioned for a large part of the affected patients. Well-known for its multiple medical implications (Cummins, Midlo 1961, Schauman, Milton 1976, Țurai, Leonida 1979, Milton *et al.* 1981, Meilă, Milea 1988, Schauman, Opitz 1991, Țarcă 1996, Țarcă 2000, Țarcă, Barabolski 2003), such an anomaly registers its highest frequencies in children affected by autism (60.22%) and epilepsy (57.84%) and quite high values in those suffering from CVD and OD (about 39%), comparatively with only 11.25% – the value of the reference group. Sexual dimorphism, as well as the bilateral differences for this distortions, agree with those of the reference sample, which assumes higher ratios, for the affected boys and on the right palms of patients of both sexes, taken from all the 4 groups under study (*Table 6*).

A distortion mentioned in several skeletal, organic or neuropsychic diseases (Cummins, Midlo 1961, Pospíšil *et al.* 1971, Schauman, Milton 1976, Țurai, Leonida 1979, Meilă, Milea 1988, Schauman, Opitz 1991, Țarcă 1998, Țarcă 2000, Țarcă 2001), present, too, in quite high ratios, comparatively with normal situations, in the affected people of the 4 groups considered for investigation, is the *partial or total trend of suppression of line C (Cx and, respectively, Co) starting from triradius "c" situated at the basis of finger IV;* these are rare ridge formations which, in normal populations, do not usually exceed 15% in the case of Cx and respectively, 2–3% in Co.

Regarding the *partial suppression of line C (Cx),* the highest frequencies are recorded, once again, in patients affected by epilepsy (37.25%) and autism (33.20%), followed, at quite small distances, by the CVD (29.47%) and OD affected ones (27.75%). One may observe from *Table 6* that, with the exception of epileptics, where the Cx is more frequent in girls, in the rest of the affected people, this anomaly is prevailing in boys, while, out of the two hands, it is predominant – in all cases – on the left palms, a tendency manifested also in the reference group from Moldavia.

As to the *total suppression Co*, which, in the reference sample does not exceed 3.0%, the highest values are recorded for OD (12.25%) and epilepsy suffering subjects (11.27%), sufficiently high values being nevertheless recorded in CVD (8.42%) and autism (7.66%). Apart from the group of CVD affected subjects, in which Co takes practically equal ratios for the two sexes (i.e. 8.75% in

TABLE 7. Percent repartition of the unilateral and bilateral disposition of the palms' anomalies with affected carriers.

Anomalies	Diseases	Only on the left hand	Only on the right hand	On both hands	Total carriers
A^R in Hp	Epilepsy	1:3=3.33	1:3=3.33	1:3=3.33	3:102=2.94
	Infantile autism	–	8:8=100.00	–	8:137=5.84
	CVD	5:20=25.00	12:20=60.00	3:20=15.0	20:95=21.05
	Ocular diseases	2:14=14.28	9:14=64.28	3:14=21.43	14:200=7.00
L^U in Hp	Epilepsy	11:24=45.83	11:24=45.83	2:24=8.33	24:137=17.52
	Infantile autism	4:18=22.22	8:18=44.44	6:18=33.33	18:95=18.94
	CVD	10:34=29.41	11:34=32.35	13:34=38.23	34:200=17.00
	Ocular diseases	9:33=27.27	12:33=36.36	12:33=36.36	33:102=32.35
tt'.tt't" etc. (Hp)	Epilepsy	9:51=17.64	27:51=52.94	15:51=29.41	51:95=53.68
	Infantile autism	17:87=19.54	35:87=40.23	35:87=40.23	87:200=43.50
	CVD	3:7=42.85	–	4:7=57.14	7:102=6.86
	Ocular diseases	7:10=70.00	1:10=10.00	2:10=20.00	10:137=7.29
t_0 (Hp)	Epilepsy	–	1:2=50.00	1:2=50.00	2:200=1.00
	Infantile autism	19:40=47.50	7:40=17.50	14:40=35.00	40:102=39.21
	CVD	17:67=25.37	29:67=43.28	21:67=31.34	67:137=48.90
	Ocular diseases	16:41=39.02	9:41=21.95	16:41=39.02	41:95=43.15
T_{11} and T_{12} instead of T_{13} (Hp)	Epilepsy	36:54=66.66	6:54=11.11	12:54=22.22	54:200=27.00
	Infantile autism	4:52=7.62	7:52=13.46	41:52=78.84	52:102=50.98
	CVD	9:68=13.23	10:68=14.70	49:68=72.07	68:137=49.63
	Ocular diseases	8:43=18.60	7:43=16.28	28:43=65.11	43:95=45.90
The dense or very dense network in Th/I	Epilepsy	5:73=6.84	23:73=31.51	45:73=61.64	73:102=71.56
	Infantile autism	10:95=10.52	15:95=15.78	70:95=73.68	95:137=69.37
	CVD	7:44=15.90	6:44=13.63	31:44=70.45	44:95=46.31
	Ocular diseases	12:98=12.94	27:98=27.55	59:98=60.20	98:200=49.00
a–b distance<21 mm in F and 24 mm in M	Epilepsy	23:67=34.33	19:67=28.36	25:67=37.31	67:137=48.90
	Infantile autism	31:50=62.00	13:50=26.00	6:50=12.00	50:95=52.63
	CVD	45:87=51.72	22:87=25.29	20:87=23.00	87:200=43.50
	Ocular diseases	7:17=41.17	4:17=23.52	6:17=35.29	17:102=16.66
Cx	Epilepsy	3:13=23.07	7:13=53.85	3:13=23.07	13:95=13.68
	Infantile autism	16:34=47.05	7:34=20.59	11:34=32.35	34:200=17.00
	CVD	3:8=37.50	4:8=50.00	1:8=12.50	8:102=7.84
	Ocular diseases	17:36=47.22	9:36=25.00	10:36=27.77	36:137=26.27
Co	Epilepsy	8:14=57.14	3:14=21.43	3:14=21.43	14:200=7.00
	Infantile autism	1:3=3.33	1:3=3.33	1:3=3.33	3:102=2.94
	CVD	–	8:8=100.00	–	8:137=5.84
	Ocular diseases	5:20=25.00	12:20=60.00	3:20=15.0	20:95=21.05
Transverse palmary sulcus	Epilepsy	3:10=30.00	6:10=60.00	1:10=10.00	10:102=9.80
	Infantile autism	11:24=45.83	11:24=45.83	2:24=8.33	24:137=17.52
	CVD	4:18=22.22	8:18=44.44	6:18=33.33	18:95=18.94
	Ocular diseases	10:34=29.41	11:34=32.35	13:34=38.23	34:200=17.00

CVD = cardio-vascular diseases (congenital malformations included) M = males; F = females.

boys and 8.23% in girls), in epilepsy, autism and OD, this distortion is more frequently met in the affected girls, a dimorphic tendency manifested in the reference sample, as well. With the exception of epileptic boys and of CVD affected girls, Co suppression records higher percent values on the left palms of patients of both sexes – which is the case of normal populations, and of our reference sample, too.

A rare ridge formation, always present in Simian monkeys (which explains, too, the name given to it: the Simian Line), and quite rarely occurring (2–4%) in normal mass batches, the values recorded in our reference sample being of 1.50%, yet found with quite high frequencies in autism (i.e. 11.04% in boys and, respectively, 8.26% in girls), as well as in CVD affected girls (8.18%) and epileptic boys (5.87%), is *the transverse palmary sulcus* (single transverse palmar crease). One may observe from *Table 6* that, with the exception of autist boys, in which the palmary sulcus registers equal frequencies on the two hands, and of epileptic girls, in which this rare formation occurs exclusively on the right palms, in the rest of the affected ones, of both sexes, it is prevalent on the left hands – which is the case of other maladies or of normal populations, as well (Schauman, Milton 1976, Țurai, Leonida 1979, Schauman, Opitz 1991, Cummins, Midlo 1961).

An individual analysis of the dermatoglyphic files, performed for both the reference group and for each of the 4 groups of affected subjects, puts into evidence the fact that, while in the first case, the palmary anomalies under study appear quite rarely and only on one of the carrier's palms (mostly, on the left one), in affected people they may be found between 3 and 9 with each carrier, of course in most varied combinations, being placed either exclusively on the left hand or on the right one, or simultaneously on both palms. Consequently, in each group of patients, taken as a whole, the last 3 dispositions record quite high percent values and a relatively reduced variability from one sample to another, as expressing the more or less high level of subjects' affection, as well as the distortions' multiple pathological effects on the carriers, considered as a whole (*Table 7*).

Once generally known that the presence of such pathological markers even on only one hand assumes severe malformative effects on their carriers (David 1973, Schauman, Milton 1976, Țurai, Leonida 1979, Cummins, Midlo 1961, Schauman, Opitz 1991, Țarcă 1995), it is quite understandable that a high frequency of the cases in which they occur simultaneously on both palms (which is the case of our 4 groups of maladies) suggests a double pathological charge and, implicitly, a high degeneration level of the carrying subjects – which is actually suggestively correlated with the symptomatic polymorphism of each malady in part, usually accompanied by still other secondary affections.

Indeed, as evidenced by the data listed in *Table 7*, in all 4 groups of affected people, the disposition of the palmary anomalies on both palms of the carriers records high values, even of majority, *versus* the one occurring exclusively on one palm, when referring to: *t_0, the dense network of the ridges in Th/I and reduction of interdigital interval a–b, yet without leaving aside the still high values characteristic for a preferential disposition on the left hand (in the case of T_{11} and T_{12}; Cx, Co, palmary sulcus) or for the one exclusively on the right hand (in case: A^R, L^U and tt't'' in Hp), a disposition sometimes equalled by the bilateral one.*

Such an observation demonstrates once more and, at the same time, confirms the close relation functioning between the invalidity degree of many of the patients included in the 4 groups of maladies and the pathological load of their dermatoglyphic picture, which is actually a most suggestive mirror of the patients' poor health condition.

CONCLUSIONS

The study of the digital and palmary dermatoglyphics of patients affected by epilepsy, infantile autism, cardio-vascular diseases and ocular affections, all from Moldavia, puts into evidence important anomalies or distortions with deep pathological significance, the percent values of which are sensibly different from those of the reference sample. At the level of the digital picture, such distortions are expressed, in all cases, by a higher incidence for A, for the racketoid-type loops and for the radiality of the digital structures taken as a whole (arches, loops and whorls) and, on the contrary, by lower values for L, characterized by quite a limited variability in the 4 groups of affected subjects), the maximum amplitude of the differences recorded being below 5% (in the case of radiality).

The palmary picture provided a more extended range of pathological "markers", taken both as a whole and only at the level of palm's compartments. To the first category there belongs the *reversion of the classical succession of patterns' distribution in palm's 5 compartments*, and placement of the Hp areal either in the formula's second position (IV>Hp>III>Th/I instead of IV>III>Hp>Th/I>II), which is the case of autists and OD affected persons, or in the first one (Hp>IV>III>Th/I>II) – for CVD suffering patients, the epileptics evidencing, from this point of view, a pattern frequency practically equal for the first three positions of the scheme IV>III>Hp>Th>II, thus sketching a tendency somehow similar to that of the reference batch. A general anomaly refers to the *reversion of the sexual dimorphism line for all indicators illustrating the generalized alignment of the palmary ridges (the palmary formulae and the modal types of lines D and A),* indicating the tendency towards a more frequent transversality of the palmary ridges in boys instead of girls and for an orientation with intermediary and oblique sloping in girls, instead of boys – as noticeable in the reference group from Moldavia.

Out of the dermatoglyphic distortions with multiple clinical implications evidenced in the palmary compartments of the 4 batches of affected subjects, A^R, L^U, tt't'', t_0, T_{11} and T_{12} are met in the Hp area, ridges' disposition as a dense and very dense network – in Th/I area, and reduction of distance a–b much under the average value recorded in Romanian populations – in the interdigital space II. To all these, one should add the partial or total suppression of line C (Cx and, respectively Co) and the transverse sulcus, a palmar flexion crease crossing from ulnar or cubital border up to the radial one.

For all the 10 palmary distortions, the recorded percent values are (comparatively with those of the reference) much higher than the digital ones, and the amplitude of the differences among the groups of affected subjects is of about 4.60% for Co and t_0, and, respectively, of 7.36% for L^U, of 10.0% for A^R, of about 13% for tt't'' and T_{11}–T_{12} and, finally, of 20.97% for the a–b distance. Mention should be nevertheless made of a quite similar behaviour – from this perspective – between autists and epileptics, on one hand, and between the CVD and OD affected persons, on the other, on observing that, for most of palm's pathological markers, the first two groups show the highest percentages.

With only a few and insignificant exceptions, A^R, L^U, t_0, T_{11}–T_{12}, a low a–b distance, Cx and the transverse palmary sulcus are more frequently met in the series of affected boys, comparatively with the girls. Also, the percent distribution of palm's distortions as a function of hand evidenced much higher percentages on the left hands for:

t_0, T_{11} and T_{12}, Cx, Co and the transverse palmary sulcus and, on the contrary, on the right ones for: A^R, L^U tt't" and the low a–b distance from interdigital II space. For several of the pathological markers under analysis, the sexual, as well as the bilateral differences agree with those of the reference sample, which demonstrates once more the detachment of the affected ones' groups off an apparently normal population as to its dermatoglyphic structure, and not only that.

The relatively high degeneration degree of the affected subjects forming the 4 groups is illustrated, in a convincing manner, in the present study, not only by the high frequencies recorded for the dermatoglyphic anomalies under analysis, but also by the increased occurrence of their disposition on carriers' both hands, besides the exclusive disposition on either their left or right hand.

As the results recorded by the author are the first ones, at national level, for the 4 maladies, they might be utilized as reference information in the screening methods applied for their precocious tracing at a populational level, especially in endogamous village communities in which the increased consanguinisation degree facilitates spreading of some pathological genes, whose malformative effects are to be found in the dermatoglyphic picture of several apparently healthy individuals, in the form of "pathological markers" quite rightly denominanted as "malformative stigmas".

Knowledge on its frequency which, in demographically close populations may be quite close, equal or even higher than the one recorded by the author for the 4 maladies, would permit a precocious estimation of the health condition in the population subjected to dermatoglyphic investigation, as well as the elaboration of the necessary measures for diminishing the risk of their spreading.

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