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CONTRIBUTIONS TO THE PATHOLOGY OF DERMATOGLYPHICS IN SOME MAJOR BRAIN AFFECTIONS

ABSTRACT: The paper synthesizes the existing data on the pathology of dermatoglyphics in three severe brain affections (epilepsy, autism and sekelary IEP-ies), followed upon a total number of 439 subjects (of which 102 are affected by epilepsy, 137 – by infantile autism and 200 – by sekelary IEP-ies) with ages between 2 and 18 years, all coming from the region of Moldova.

An important observation to be made is that the ample symptomatic polymorphism of the three congenital maladies, part of them hereditary, should be correlated with the presence – in the digital and palmar dermatoglyphic picture – of some significant distortions or anomalies bearing deep clinical implications, responsible for their deep pathological charge. In each of the three grave brain affections here considered, there appear the same anomalies – the frequency of which, at the level of the whole group, is not very different from one group of affected people to another, being nevertheless sensibly different from that recorded in the apparently normal population from which the patients come, a situation suggesting that the determining factors of the three maladies had manifested themselves in an early stage of prenatal life (more precisely, in the first 3–5 months of intrauterine life), when the epidermal papillary ridges are also finalized, although the debut as such of each of the three affections occurred during post-natal life, under the action of a large range of secondary factors.

For many of the palmar anomalies (A^R, Cx, Co, t_0 and much reduced a-b distance), the highest weight is given by the group of patients with sekelary IEP, while, for L^U, tt't'', $T_{11}+T_{12}$ and the transverse palmar sulcus – by the group of autists and, finally, for the dense network of the ridges from Th/I – by epileptics, a succession actually correlated with the complexity of the clinical picture for the malady by which the subjects of the three groups are affected. More than that, one may also observe that the 10 palmar anomalies here evidenced have, in all cases, the same line of sexual dimorphism, of bilateral differences and of their arrangement in the carriers' palm, all these aspects suggesting a quite unitary dermatoglyphic behaviour of theirs. The results obtained by the author – the first ones recorded, on a national level, for each of the three affections – might be further used as reference data for their precocious tracing, at populational level, at least in the region of Moldova from where the patients come, while the distortions as such might be viewed as "markers" in the diagnosis of the persons potentially exposed to such maladies.

KEY WORDS: Dermatoglyphics – Distortions or anomalies – Brain affections – Epilepsy – Autism and infantile encephalopathies – Pathology – Moldova (Romania)

INTRODUCTION

The present study, resuming the investigations of populational pathologic dermatoglyphy developed by the author in the last 17 years, synthesizes the results evidencing the pathology of dermatoglyphics in patients affected by epilepsy, autistic syndrome and infantile sekelary encephalopathies (IEP) or brain paralyses, as they have been also called (Arseni, Stoica 1981, Pendefunda, Ştefanache 1992), all these maladies occurring quite

frequently in the Romanian population, generally, and in the Moldavian one (from which the patients actually come), especially.

Considering that each of the three major brain congenital affections are approached – for the first time in Romania – from a dermatoglyphic perspective, the distortions or anomalies with deep pathological significance here evidenced may be viewed as contributing to the elucidation of their clinical picture for dermatoglyphic diagnosis at populational level, as well as to a precocious tracing of the persons risking to be affected by one or other of the three neuropsychic maladies, at least in the region of Moldova, from where all the three groups of patients come.

MATERIALS AND METHOD

The investigations – developed at the Centre of Mental Health of the "Socola" University Hospital of Iassy – involved dermatoglyphic study (i.e. finger and palmar printing), developed along several years, of 439 patients (218 boys and 221 girls), with ages between 2 and 18 years, from whom 878 digital and palmar prints have been recorded. Out of the 439 subjects, 102 suffer from epilepsy (51 boys and 51 girls), 137 – from infantile autism (67 boys and 70 girls) and 200, respectively, from infantile sekelary encephalopathies (100 boys and 100 girls).

In the group of epileptics, 35.29% of the persons manifest idiopatic comitial crises (the causes of which are not known), in 33.33% of them epilepsy is accompanied by mild up to severe mental deficiency (Figueroa *et al.* 1971, Pendefunda, Ştefanache 1992, Pospíšil *et al.* 1971), in 25.49% it runs in the family (i.e. the family included at least another epileptic), while in 5.88% of the cases, epilepsy is post–traumatic or post–meningitis (Arseni *et al.* 1978, 1981). In 96 of the epileptics, the debut of the malady occurred at ages between 2 and 6 months, as repeated convulsions which – in time – got amplified, up to a generalized tonico-clonic form (GM) while, in 6 patients, the crises began in the peri-puberal period, being manifested directly in their generalized form (Ţarcă, Barabolski 2002). As to the 137 autists, in 52.55% of them the malady is accompanied by moderate mental deficiency (MMD), hypoacusy, allaly, dislexy and enuresis; in 36.58% – by severe mental deficiency (SMD) with a IQ value below 34, by anxiety, dislally and double incontinence and, finally, in 10.95%, the autism is associated with epilepsy, enuresis and MMD. Out of the large range of disorders specific to the autistic syndrome, in the batch under study there were present: retarded speaking, refuge in a hermetic world of one's own, dominated by obsessive images, by feelings and experience without any support in the real world, stereotypical ritual gestures, etc. (Bowman 1983, Ţarcă, Barabolski 2003). In the group of patients suffering from brain paralyses or sekelary IEP-ies, 36.5% evidence paraparesis or paraplegy as the basic manifestation of the malady, 30.50% – tetraparesis or tetraplegy, 14.5% – hemiparesis or hemiplegy, 3% – diplegy, and 15.50% – mild forms of brain paralysis, such as: monoparesis, facial paralysis, paralysis of the optic nerve, etc. (Arseni *et al.* 1981, Pospíšil *et al.* 1971, WHO 2002, Ţarcă 2004). At the same time, in 66% of the affected subjects, paralysis is of the spastic type, in 18.50% it is flax or atones while, in the remaining 15.50%, it evidences mild, partially or wholly recoverable forms. In the ample clinical picture of the malady, in 49% of the cases, brain paralysis is associated with mild up to severe mental deficiency, in 20%; some ocular affections are to be added, in 11% – epilepsy, in 10% – autism and in 10% – either enuresis or double incontinency (Ţarcă 2004).

The ample symptomatic polymorphism of the three cerebral maladies – in the case of patients with autistic syndrome and sekelary IEP-ies especially, determined by the Examination Commission of the Center for Mental Health of Iaşi, which establishes the handicap degree, to include 75% of the affected persons to the highest invalidity degree (I) which, as evidenced in the following, is suggestively correlated with an ample and intense pathological charge of their digital – and especially palmar – dermatoglyphic picture.

In parallel with printing of the patients, the persons accompanying them have also been inquired, to see whether, in the ascending line of the family, from the part of both parents or of collateral relatives, there existed at least one person with the same malady or with a few elements from the ample symptomatic polymorphism of the three affections; the results of the inquiry showing in more than half of the subjects under investigation – from all the three groups – that the malady is inherited.

For all digital and palmar dermatoglyphic anomalies here evidenced, there have been followed: sexual dimorphism, bilateral differences, the distribution on the 5 cumulated fingers, as well as the manner in which they appear in the carriers (on either one or on both hands simultaneously), this last aspect permitting the evaluation of patients, the more or less intense degree of affection, from a dermatoglyphic perspective (Schauman, Opitz 1991, Ţurai, Leonida 1979).

If considering that, at batch level, dermatoglyphic distortions are but deviations in the frequency of some of the digital or palmar dermatoglyphic characteristics from the values recorded in the apparently normal population from which they come, the results obtained have been compared with those recorded – by the same author – in a reference batch of Moldova (Ţarcă 1995).

The working methods applied are those currently employed in studies of populational pathological dermatoglyphics (Cummins, Midlo 1961, Schauman, Opitz 1991, Ţurai, Leonida 1979).

RESULTS AND DISCUSSION

Individual analysis of dermatoglyphic files showed that the patients belonging to the three groups of affected

people, the ones with mild forms of malady included, evidence in their dermatoglyphic digital and palmar – especially – picture multiple and important distortions or anomalies bearing deep clinical implications. At the level of the sample group, these anomalies attain average ratios not much different from one group of affected persons to another, being nevertheless sensibly different from the values of the reference group of Moldova from which the patients come.

At the level of the digital dermatoglyphic picture, such distortions involve:

- *An increase much over the normal threshold of the frequency of arches (A)*, with values oscillating between a minimum of 9.25% in patients with sekelary IEP-ies, and a maximum of 13.03% in epileptics, *versus* only 3.5% – the value of the reference series of Moldova (*Table 1*). Unlike the normal populations, in which this pattern occurs in double ratios in girls, comparatively with boys, and especially on the left hand (Cummins, Midlo 1961, Țarcă 1995, Țurai, Leonida 1979), in the three groups of affected people, sexual dimorphism, as well as bilateral differences – yet maintaining the actual tendency in the reference group (Țarcă 1995), are weakly expressed, with the only exception of the group of autists and exclusively for the sexual differences assuming slightly higher values in boys, yet without being significantly different from those of girls.
  This diminution in the amplitude of sexual and bilateral differences, as well as the tendency of reversing their classical line, may be considered among the digital distortions with pathological significance, evidenced – as well – in other severe genetic or teratological maladies (Cummins, Midlo 1961, Matsui 1985, Schauman, Opitz 1991).
  As to distribution arches (A) on the 5 cummulated fingers, in decreasing order of their frequency, it maintains – as shown in the same *Table 1* – the same succession in all the three brain affections: II>III>IV>I>V or II>III>I>IV>V, a hierarchisation different from that of the reference group by the latter three positions from the classical scheme (II>III>V>I>IV).
- *Presence of A in quite a high percentage of ratios on fingers I and IV* in all the three groups of affected people may also be viewed as a deviation from normal behaviour, with important clinical significance, the more so that – theoretically – the majority, sometimes even exclusive, of this pattern (A), are present on fingers II and III, in both boys and girls (Schauman, Opitz 1991, Țurai, Leonida 1979).
- *Considerable diminution of the weight for loops (L),* in all the three groups of affected people, where this model of majority varies between 56.57% in epileptics and 60.44% in autists, comparatively with 71% – in the reference group. Sexual differences in distribution L which – theoretically – assume higher ratios in girls than in boys, deviate from this classical tendency only in the case of epileptics and autists, where they are prevailing in boys (B>G). As to the bimanual differences in distribution L, a reversion from the classical scheme (R>L instead of L>R) may be observed only in patients affected by infantile autism. Similarly to the case of A, these reversions in distribution L, as a function of sex and laterality, are viewed as distortions with clinical significance in the groups of affected subjects under

TABLE 1. Percent distribution, bilateral sexual differences and arrangement of digital distortions on fingers. Epilepsy: N=102 (Țarcă, Barabolski 2002), Autism: N=137 (Țarcă, Barabolski 2003), IEP- Infantile encephalopathies: N=200 (Țarcă 2004), reference: N=200 (Țarcă 1995).

Digital distortions	Brain affections and reference group	%	Sexual differences	Bimanual differences	Distribution on fingers
A on all fingers	Epilepsy	13.03	F≥M	L≥R	II=III>IV>I>V
	Autism	10.29	M≥F	L≥R	II>III>I>IV>V
	IEP	9.25	F>M	L≥R	II>III>IV>I>V
	Reference	3.50	F>M	L>R	II>III>V>I>IV
L on all fingers	Epilepsy	56.27	M≥F	L≥R	V>III>IV>I>II
	Autism	60.44	M>F	R>L	V>III>II>IV>I
	IEP	58.05	F>M	L>R	V>III>I>IV>II
	Reference	71.00	F>M	L>R	V>III>I>IV>II
Raketoid loops	Epilepsy	6.66	F=M	R≥L	IV>V>I>II>III
	Autism	9.19	F>M	R≥L	IV>V>II>III>I
	IEP	7.50	M>F	L>R	V>IV>II>III>I
	Reference	–	–	–	–
Radiality of the digital structures (A+L+W)	Epilepsy	12.35	M≥F	R>L	II>III>IV>I>V
	Autism	7.35	F≥M	L>R	II>III>IV>I>V
	IEP	11.50	F≥M	R>L	II>IV>III>I>V
	Reference	2.50	M>F	R>L	II>III>V>I>IV

investigation – to be met in other congenital maladies, as well (Matsui 1985, Schauman, Opitz 1991). As to the distribution of L on the 5 cummulated fingers, the observation to be made is that – as actually shown in *Table 1* – it is only the group of patients affected by autistic syndrome that deviate from the classical line, and only in the case of the last position from the diagram which, in such cases, is occupied by finger I instead of II (V>III>II>IV>I instead of V>III>I>IV>II).

- *Higher incidence, comparatively with the normal, for the raketoid loops* (a model usually absent or only exceptionally occurring in normal people), with values ranging between a maximum of 9.10% in autists and a minimum of 6.66% in epileptics. If, in the case of epileptics, this rare pattern registers equal ratios in the two sexes, in patients with autism it is more frequent in the affected girls and, reversely, more frequent in the boys with sekelary IEP-ies.

  Bilateral differences noticed in the distribution of the raketoid loops indicate frequencies slightly in favour of the right hands – in patients with autism and epilepsy and, on the contrary, in favour of the left hands – in the group with IEP. Out of the 5 fingers, the raketoid loops are most frequently occurring, in all cases, on fingers IV and V, followed, in decreasing order, of II>III>I, for autists and epileptics, and of I>II>III, respectively, in epileptics.
- *A last digital distortion* present in all the three grave neuro-psychic affections, the malformative effects of which upon the carriers may be compared to those caused by the modification in the position of internal organs, refers to unexpected increase of frequency of digital patterns radial orientation, considered as a whole (A+L+W). The value of this frequency varies between 7.35% in autists and 12.35% in epileptics, *versus* only 2.50% in the reference group. If, in the reference sample, radial orientation is predominant in boys, in the three brain affections it records quite close frequency values in the two sexes, with the observation that, in the case of epileptics, boys tend to slightly equal the girls (B≥G), while the situation is reverse in autists and encephalopathes (G≥B). Theoretically, bimanual differences are expressed by higher percent ratios of the radial orientation on the right hand – R>L (Cummins, Midlo 1961, Țarcă 1995, Țurai, Leonida 1979), which is also occurring in the series of epileptics and encephalopathes while, in the group of autists, radiality is more frequent on the left hand (L>R). As to the distribution of radiality on the 5 cummulated fingers, it maintains, in each of the three serious

TABLE 2. Percent distribution, according to hand and sex, of the main palmar formulae. (Note: 11–9–7>9–7–5>7–5–5).

Affections and 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	B (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
	G (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
Autism	B (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
	G (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
IEP	B (N=100)	L	40.00	30.00	16.00	14.00
		R	59.00	13.00	15.00	13.00
		L+R	49.50	21.50	15.50	13.50
	G (N=100)	L	44.00	29.00	17.00	10.50
		R	66.00	19.00	10.00	5.00
		L+R	55.00	24.00	13.50	7.75
Reference sample	B (N=100)	L	23.00	37.00	24.00	16.00
		R	42.00	28.00	18.00	12.00
		L+R	32.50	32.50	21.00	14.00
	G (N=100)	L	29.00	36.00	20.00	15.00
		R	49.00	27.00	14.00	10.00
		L+R	39.00	31.50	17.00	12.50

neuropsychic maladies, the same hierarchisation, namely II>III>IV>I>V, as actually occurring in the reference batch (II>III>V>I>IV).

A larger range of dermatoglyphic distortions with deep medical significance, grouped between 2 and 7 in one's palm, has been provided by the palmar picture of the affected subjects. Considered at the level of each affected group, taken as a whole, the first – general – distortion refers to the leaning or orientation extent of the palmar ridges, evaluated by the frequency of the main palmar formulae imagined by H. H. Wilder (viz. Cummins, Midlo 1961) – *Table 2*, that is: formula 11–9–7 expressing transversal cross orientation of the ridges, 9–7–5, expressing intermediary leaning and 7–5–5, respectively – an expression of oblique leaning.

Table 2 shows that, on the whole, each of the three brain affections evidences the same succession in the frequency of the three main formulae as the reference batch, which assumes some prevalence of transversal orientation of the ridges (11–9–7), closely followed by the intermediary one (9–7–5) and, at a certain distance, by the oblique one (7–5–5), namely: 11–9–7>9–7–5>7–5–5, which is actually a hierachisation present in both the Romanian (Țurai, Leonida 1979, Țarcă 1995) and Europoid populations (Cummins, Midlo 1961).

The situation is nevertheless different for sexual differences which, theoretically, assume a more pronounced tendency for transversal leaning – in girls, and for an oblique one, respectively – in boys (which is also the case of the reference). An important overturning from the classical

TABLE 3. Percent distribution of palmar distortions as a function of sex and laterality.

Palmar distortions	Affections and reference	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
	Autism	–	4.47	2.23	–	7.14	3.57	–	5.80	2.90
	IEP	3.00	2.00	2.50	1.00	7.00	4.00	2.00	4.50	3.25
	Reference	–	1.00	0.50	–	1.00	0.50	–	1.00	0.50
L^U in Hp	Epilepsy	3.92	7.84	5.88	5.98	5.90	5.94	4.90	6.86	5.87
	Autism	10.45	13.43	11.95	10.00	5.71	7.85	10.22	9.49	9.67
	IEP	11.00	8.00	9.50	9.00	9.00	9.00	10.00	8.50	9.25
	Reference	1.00	2.00	1.50	3.00	1.00	2.00	2.00	1.50	1.75
tt't", in Hp etc.	Epilepsy	17.64	21.57	19.60	23.53	25.49	24.51	20.58	23.53	22.05
	Autism	22.39	32.83	27.61	32.86	40.00	36.43	27.74	36.49	32.11
	IEP	26.00	29.00	27.50	26.00	39.00	32.50	26.00	34.00	30.00
	Reference	15.00	16.00	15.50	16.00	17.00	16.50	15.50	16.50	15.75
to in Hp	Epilepsy	7.84	3.92	5.88	5.88	3.92	4.90	6.86	3.92	5.39
	Autism	2.98	–	1.49	10.00	4.28	7.14	6.56	2.19	4.37
	IEP	11.00	10.00	10.50	6.00	4.00	5.00	8.50	7.00	7.75
	Reference	–	–	–	–	–	–	–	–	–
$T_{11}+T_{12}$ instead of T_{13} (Hp)	Epilepsy	25.49	17.64	21.06	39.21	23.53	31.37	32.35	20.59	26.47
	Autism	41.79	22.39	32.09	30.00	27.14	28.57	35.77	24.82	30.29
	IEP	23.00	11.00	17.00	36.00	23.00	29.50	29.50	17.00	23.25
	Reference	5.00	2.00	3.50	7.00	4.00	5.50	6.00	3.00	4.50
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
	Autism	29.95	29.85	29.90	61.43	55.71	58.57	45.98	43.06	44.52
	IEP	23.00	27.00	25.00	30.00	32.00	31.00	26.50	29.50	28.00
	Reference	3.00	5.00	4.00	5.00	7.00	6.00	4.00	6.00	5.00
a–b distance <21 mm in G and 24 mm in B	Epilepsy	58.82	82.35	70.58	39.21	50.98	45.09	49.02	66.66	57.84
	Autism	61.19	67.16	64.17	55.71	57.14	56.42	58.39	62.04	60.22
	IEP	72.00	80.00	76.00	70.00	76.00	73.00	71.00	78.00	74.50
	Reference	11.00	13.00	12.00	9.00	12.00	10.50	10.00	12.50	11.25
Cx	Epilepsy	41.17	25.49	33.33	45.10	37.25	41.17	43.13	31.37	37.25
	Autism	37.31	35.82	36.56	32.86	27.14	30.00	35.03	31.38	33.20
	IEP	48.00	31.00	39.50	44.00	28.00	36.00	46.00	29.00	37.75
	Reference	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
	Autism	5.97	4.47	5.22	11.43	8.57	10.00	8.76	6.56	7.66
	IEP	8.00	7.00	7.50	18.00	17.00	17.50	13.00	12.00	12.50
	Reference	3.00	2.00	2.50	5.00	2.00	3.50	4.00	2.00	3.00
Transverse palmar sulcus	Epilepsy	7.83	3.92	5.87	–	2.94	1.47	3.92	3.43	3.67
	Autism	11.94	11.94	11.94	10.00	6.43	8.26	10.95	9.18	10.06
	IEP	18.00	12.00	15.00	15.00	8.00	11.50	16.50	10.00	13.50
	Reference	3.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.50

line of sexual dimorphism may be noticed in the series of epileptics and autists – for transversal orientation (11–9–7), more frequently occurring in boys instead of girls, as well as for the intermediary one (9–7–5), in all the three series of affected people, where it is more frequently occurring in girls instead of boys *(Table 2)*.

Bilateral differences in the distribution of the three types of orientation of palmar ridges follow – in all the three brain maladies – the classical line, which is actually present in our reference, too, involving a higher weight of the transversal (11–9–7), on the right palm of the subjects, of the intermediary (9–7–5) and of the oblique (7–5–5) leaning on the left hand, in both sexes (*Table 2*).

A disordered line of palmar ridges, responsible for the charged, lace-like aspect of the palm, illustrated by a frequency of "other formulae" instead of the main ones, occurs more frequently– apart from the group of autists – in the masculine series (similarly to the reference) and, in all cases, on the left hand – actually recognized as carrying most of the malformative stigmas (Cummins, Midlo 1961, Țarcă, Barabolski 2002, 2003, Țarcă 2004, Țurai, Leonida 1979).

Important distortions, if considering their clinical implications (Pospíšil *et al.* 1971, Schauman, Opitz 1991, Țarcă 1996, Țurai, Leonida 1979), have also been evidenced on the level of palmar compartments, the frequency of which, as a function of hand and sex, is presented in *Table 3*, comparatively to that of the apparently normal population of Moldova (from which the affected patients come). The data of *Table 3* show that half of these anomalies (the first 5 ones) are from the Hypothenar area of the palm (Hp). Out of all 10 distortions, radial arch (A^R) from Hp, absence of triradius t (t_0), a–b distance much more reduced than the average value in the Romanian population – of 21 mm in women and 24 mm, respectively, in men, partial suppression of line C(Cx), total suppression of line C(Co), as well as transverse palmar sulcus, register the highest ratios in patients affected by sekelary IEP-ies, in whom the clinical picture of the disease manifestation is also the most complex.

TABLE 4. Percent distribution of the arrangement of palmar distortions in carriers.

Palmar distortions	Cerebral affections	On left hand only	On right hand only	On both hands	Total carriers
A^R in Hp	Epilepsy	1:3=33.33	1:3=33.33	1:3=33.33	3:102=2.94
	Autism	–	8:8=100.00	–	8:137=5.84
	IEP	4:13=30.77	9:13=69.23	–	13:200=6.50
L^U in Hp	Epilepsy	3:10=30.00	6:10=60.00	1:10=10.00	10:102=9.80
	Autism	11:24=45.89	11:24=45.83	2:24=8.33	24:137=17.52
	IEP	11:28=39.28	8:28=28.57	9:28=32.14	28:200=14.00
tt't", in Hp etc.	Epilepsy	9:33=27.27	12:33=36.36	12:33=36.36	33:102=32.35
	Autism	17:67=25.37	29:67=43.28	21:67=31.34	67:137=48.90
	IEP	19:87=21.84	35:87=40.23	33:87=37.93	87:200=43.50
to in Hp	Epilepsy	3:7=42.85	–	4:7=57.14	7:102=6.86
	Autism	7:10=70.00	1:10=10.00	2:10=20.00	10:137=7.30
	IEP	7:21=33.33	4:21=19.04	10:21=47.62	21:200=10.50
$T_{11}+T_{12}$	Epilepsy	19:40=47.50	7:40=17.50	14:40=35.00	40:102=39.21
	Autism	17:67=25.37	29:67=43.28	21:67=31.34	67:137=48.90
	IEP	41:75=54.66	16:75=21.33	18:75=24.00	75:200=37.50
Dense or very dense network in Th/I	Epilepsy	4:52=7.62	7:52=13.46	41:52=78.84	52:102=50.98
	Autism	9:65=13.23	10:68=14.70	49:68=72.04	68:137=49.63
	IEP	11:70=15.71	17:70=24.28	42:70=60.00	70:200=35.00
a–b distance < 21 mm in G and 24 mm in B	Epilepsy	5:73=6.84	23:73=31.51	45:73=61.64	73:102=71.57
	Autism	10:95=10.52	15:95=15.78	70:95=73.68	95:137=69.37
	IEP	12:168=7.14	26:168=15.47	130:168=77.38	168:200=84.00
Cx	Epilepsy	27:59=45.76	15:59=25.42	17:59=28.81	59:102=57.84
	Autism	23:67=34.33	19:67=28.36	25:67=37.31	67:137=48.90
	IEP	57:116=49.13	24:116=20.69	35:116=30.17	116:200=58.00
Co	Epilepsy	7:17=41.17	4:17=23.52	6:17=35.29	17:102=16.66
	Autism	8:17=47.06	7:17=41.17	2:17=11.76	17:137=12.40
	IEP	12:36=33.33	10:36=27.77	14:36=38.88	36:200=18.00
Transverse palmar sulcus	Epilepsy	3:8=37.50	4:8=50.00	1:8=12.50	8:102=7.84
	Autism	17:36=47.22	9:36=25.00	10:36=27.77	36:137=26.27
	IEP	18:39=46.15	6:39=15.38	15:39=38.46	39:200=19.50

Distortions referring to the presence of ulnar loop in Hp (L^U), the finalization of line T course in fields 11 and 12 of the palm (T_{11} + T_{12}) instead of T_{13}, and the simultaneous presence in Hp in 2, 3 or even 4 triradia, of which at least one appears in distal position tt'; tt't"; t,t',t",t"', record highest frequencies in the patients with autism, while the disposition of papillary ridges from the Th/I area, as a dense and very dense network of ridges instead of a radial orientation (46.07%) – in epileptics, followed closely by autists, with 44.52%. As a matter of fact, both from the viewpoint of pathology of palmar dermatoglyphics and from a clinical perspective, the most ample pathological charge is evidenced by patients with sekelary IEP-ies, followed by autists and – on the last position – by epileptics; one should nevertheless take account of the fact that – especially in the case of encephalopaths and autists – no significant differences appear as to the percent values recorded, considering that the spectrum of clinical manifestations of the malady is quite amply expressed, in both cases. With only a few exceptions, all the three groups of affected people evidence the same dimorphic tendency towards the distribution of palmar anomalies, which assumes higher percent values, in the masculine series, for L^U, reduced a–b distance, and transverse palmar sulcus and reversely in the feminine series, for A^R, tt'tt", the dense network of the ridges from Th/I, T_{11}+T_{12} and Co.

As to the distribution of the ten palmar anomalies as a function of the hand, the observation to be made, once again, is that – with only minor exceptions – in each of the three major brain affections, L^U, t_0, T_{11}+T_{12}, Cx, Co and the transverse palmar sulcus are more frequently occurring on the left hand, while A^R from Hp area, the dense network of papillary ridges from Th/I and much reduced a–b distance – on the contrary, on the right hand, a tendency also present in the reference group (even if with much reduced frequencies), which confirms, once again, the origin of the three groups of affected people in the apparently normal population of Moldova.

The more or less high extent of affection, from a dermatoglyphic perspective – of the three groups of patients has been estimated by the manner in which palmar distortions are arranged in their carriers (on either one of the hands or on both of them, simultaneously), too, once known that their presence even on only one hand assumes severe and important malformative effects upon the carriers (Matsui 1985, Schauman, Opitz 1991, Țurai, Leonida 1979).

Analysis of the data listed in *Table 4* – illustrating the percent distribution of the three possible arrangements of palmar distortions in carriers – showed that, in all the three congenital brain affections, the L^U, T_{11}+T_{12}, Cx, Co and transverse palmar sulcus anomalies have an exclusive disposition on the left hand; A^R and tt't" an exclusive disposition on the right hand, while t_0, the dense and very dense network of the ridges from Th/I and the a–b distance much more reduced than the normal one – a simultaneous presence on both palms of affected carriers.

Analysis of the percent values recorded in the three types of disposition in the carriers of the ten palmar distortions, in the three groups of affected subjects, shows that, for the exclusive presence on the left hand of the carriers of the L^U, T_{11}+T_{12}, Cx, Co and transverse palmar sulcus anomalies, as well as for the one appearing exclusively on the carriers' right hand, for the A^R and tt't" etc., the highest weight is held by autists and encephalopaths, followed by epileptics while, for the simultaneous presence on both hands of t_0, for the dense network in Th/I and for much reduced a–b distance, the first position is occupied by epileptics, followed by patients with sekelary IEP-ies and autists. The same *Table 4* illustrates that, for the A^R, t_0, Cx, Co and much reduced a–b distance – the clinical implications and malformative effects of which are among the most severe upon the carriers (Matsui 1985, Schauman, Opitz 1991, Țurai, Leonida 1979) – the highest number of carriers is represented by patients with sekelary IEP-ies, for L^U, tt't", T_{11}+T_{12} and the transverse palmar sulcus, by autists, and for the dense network of ridges from Th/I – by epileptics. This hierarchisation does not only agree well with the complexity of the clinical picture characterizing the three brain maladies, but also supports the above assertion on the succession of the frequencies recorded by these distortions in the three affections, correlated, as well, with the total number of their carriers.

CONCLUSIONS

Dermatoglyphic study of patients suffering from epilepsy, autism and sekelary IEp-ies evidenced that symptomatic polymorphism of the three maladies is correlated with an ample and intense pathological charge of their digital and palmar picture, suggestively expressed by the high ratios recorded by the distortions or anomalies bearing deep medical significance. Mention should be made of the fact that all the three grave neuro-psychic maladies under analysis evidence the same dermatoglyphic anomalies or distortions, with quite similar frequencies from one group of affected people to another, yet sensibly different from the values recorded in the apparently normal population from which they come.

If, on the level of the digital picture, out of the three groups of affected subjects, the highest part of anomalies occur in epileptics, most of palmar anomalies, with even deeper pathological significance (A^R, Cx, Co, t_0, reduced a–b distance and palmar sulcus), are to be met in patients with sekelary IEP-ies, followed by autists (in the case of L^U, tt't", T_{11}+T_{12}) and – on a last position – by epileptics (for the dense network of ridges from Th/I), a succession agreeing fully with the complexity of the clinical picture of each group of affected people.

With only minor exceptions, all the three groups of affected subjects show the same line of sexual dimorphism in the distribution of the 10 palmar anomalies, assuming higher percent values for L^U, t_0, Cx, a–b reduced and palmar

sulcus, in boys; a wholly different situation from that is registered in girls, where A^R, tt't'', $T_{11}+T_{12}$, Co and the dense network of ridges in Th/I should be mentioned.

As to the distribution of the 10 anomalies as a function of the hand, it evidences quite similar tendencies in the three grave brain affections, where L^U, Cx, Co, t_o, $T_{11}+T_{12}$ and the palmar sulcus are more frequently occurring on the left, while A^R, tt't'', the dense network in Th/I and reduced a–b distance, on the contrary – on the right hand.

Quite similar behaviour of the three groups of affected people was also noticed for the manner in which the 10 palmar anomalies are arranged in their carriers. Thus, for the exclusive presence on the left hand, of majority in all cases are the following distortions: L^U and $T_{11}+T_{12}$, Cx, Co and transverse palmar sulcus, for the exclusive presence on the right hand A^R and tt't'', etc., while, for simultaneous presence on both palms of the carriers, t_0, reduced a–b and the dense network of papillary crests from Th/I. Worth mentioning here is the fact that, for anomalies A^R, t_0, Cx, Co and reduced a–b, known as having the most severe clinical significance and the worst malformative effects, most of their carriers appear in the group of patients with sekelary IEP-ies, L^U, tt't'', $T_{11}+T_{12}$ and sulcus occur in the group of autists, while the dense network of papillary ridges in Th/I is found in epileptics – a succession agreeing fully with the clinical picture of the three congenital maladies.

Considering that, in Romania, the three neuropsychic affections are for the first time approached from a dermatoglyphic perspective, the results of the present study – contributing to a better knowledge of the indices of dermatoglyphic diagnosis – might be used as reference data in the screening methods of tracing at populational level, at least in the region of Moldova from which the subjects come, while the anomalies as such – as "markers" for a timely diagnosis of persons liable to be affected by such severe maladies.

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