

Palm Flexion Creases in Bulgarians

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Normally on the palm there are three major flexion creases: Plica flexoria pollicis, Plica flexoria transversa proximalis, Plica flexoria transversa distalis. The type and frequency of the abnormal flexion creases in representative group of 1160 healthy males and 1268 healthy females from 116 settlements in Bulgaria are investigated. Highest is the frequency of males and females having normally situated flexion creases. The frequency of the established abnormal flexion creases in healthy Bulgarians is low. It is 10.20% in males and 6.71% in females. The results obtained about abnormal flexion crease *type I* are in unison with the data elaborated by some authors concerning other European populations.

Key words: dermatoglyphics, palm flexion creases, healthy Bulgarian men and women.

Introduction

Normally on the palm there are three major flexion creases existing already at birth: Plica flexoria pollicis (Pfp), Plica flexoria transversa proximalis (Pftp), Plica flexoria transversa distalis (Pftd). It is well known that the flexion creases developed at the same time with papillary ridges during the 3rd fetal month and could be distinguished in the 12-months fetuses. According to H. C u m m i n s, C. M i d l o [4] the flexion creases are not elements of the dermatoglyphics. H. K u m b n a n i [8], however, minds that "...the flexion creases are the integral part of palm and are even most important landmarks of the dermatoglyphics." We agree with the attitude of K u m b n a n i [8] since in different genetic and hereditary diseases are found abnormal flexion creases – fourth transverse palmar crease, the so-called "simian crease"; Sydney crease; their different variations and transitional forms. Concerning abnormal flexion creases there are various definitions and classifications [1, 3, 4, 7, 11, 16 and others].

The aim of the present study is to define the type and frequency of the abnormal flexion creases in healthy Bulgarians.

Material and Methods

Object of the investigation are the dermatoglyphic prints taken from both hands of 2430 Bulgarians from both genders (1160 males and 1268 females) at the age 30-40 years living in 116 settlements of the country.

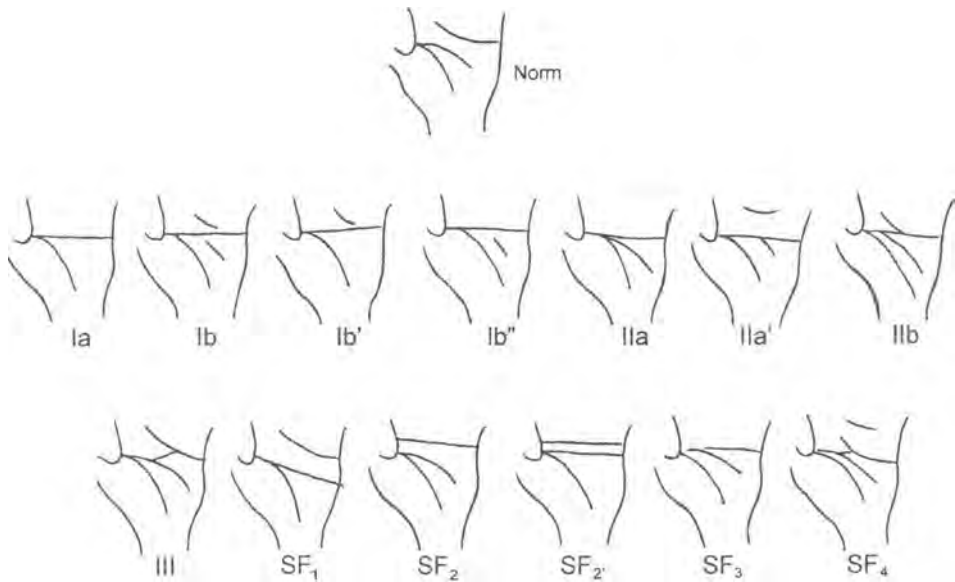


Fig. 1 Scheme of the different types of palm flexion creases (after Weninger, Navratil [16] added by us)

The determination of abnormal creases is made using the scheme of M. Weninger, L. Navratil, [16]. The authors distributed the fourth finger crease into two forms: classical crease (Ia) and such one having also fragments from the proximal and distal creases. They defined also the transitional and peculiar forms. For our investigation we added into their scheme some new forms (Fig. 1).

Results

The data presented in Table 1 show that highest is the frequency of males and females having normally situated flexion creases (type N) on both hands. The common frequency concerning all abnormal forms of flexion creases in males is 10.20% and in females – 6.71%.

From the abnormal forms in males and females most frequent are the flexion creases of the summed *type II* (IIa + IIa' + IIb). Next by frequency for males is the *type SF* ($SF_1 + SF_2 + SF_2' + SF_3 + SF_4$), while for females it is the *type I* (Ia + Ib + Ib' + Ib'') (Fig. 2).

Combinations of the flexion creases type on right and left hand are computed and compared, as well. Most are the individuals by which is observed a normal situation of the flexion creases on both hands (males 85.18%; females 89.44%). The other combinations distributed between right and left hand are pretty rarer. One and the same abnormal creases' type on both hands are found in 3.19% of the males and 1.02% of the females, while different types abnormal creases on both hands are found in 2.41% of the men and 1.81% of the women (Fig. 3).

Some forms of abnormal flexion creases found in the investigated by us contingent Bulgarians are established in Figure 4.

The results obtained in the present investigation and being representative for the Bulgarian population about abnormal flexion crease *type I* are in unison with the data

Table 1. Frequency of the types of palm flexion creases (%)

Type	Males <i>n</i> = 1160			Females <i>n</i> = 1268		
	Hand			Hand		
	right	left	both hands	right	left	both hands
Norm	89.24	90.34	89.79	93.61	92.98	93.29
Ia	0.17	0.69	0.43	0.55	0.32	0.44
Ib	1.12	0.95	1.04	0.95	0.95	0.95
Ib'	0.78	0.25	0.52	0.08	0.32	0.20
Ib''	0.25	0.35	0.30	0.24	0.39	0.32
IIa	0.43	0.43	0.43	0.16	0.39	0.28
IIa'		0.17	0.09			
IIb	2.41	2.24	2.32	1.97	1.88	1.92
III	1.72	1.47	1.59	0.47	0.79	0.63
SF ₁	0.35	0.25	0.30	0.47	0.47	0.47
SF ₂	0.43	0.35	0.39	0.32	0.32	0.32
SF ₂ '		0.09	0.04			
SF ₃	1.55	1.21	1.38	0.47	0.24	0.35
SF ₄	0.52	0.52	0.52	0.32	0.63	0.48
Other	1.03	0.69	0.86	0.39	0.32	0.35
Abnormal flexion creases - total	10.76	9.66	10.21	6.39	7.02	6.71

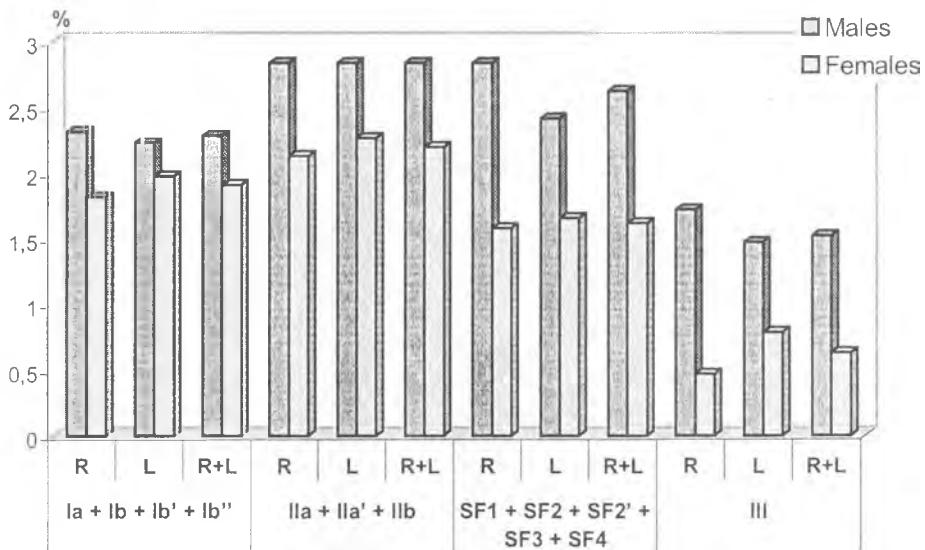


Fig. 2. Frequency of different types abnormal flexion crease (%)

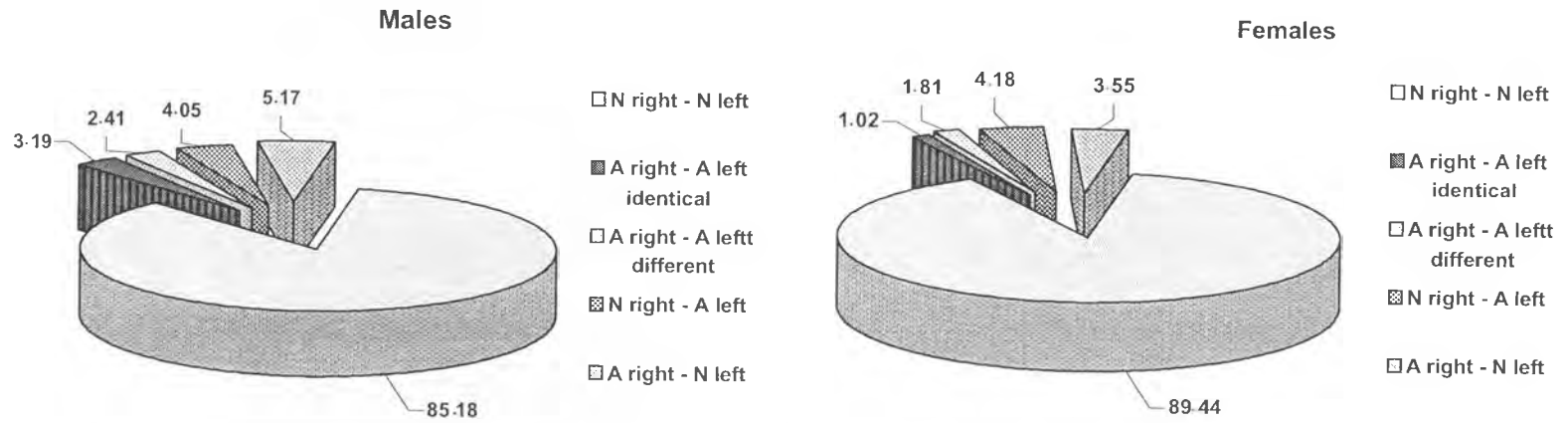


Fig. 3. Frequency of the type's combinations of flexion creases on right and left hand (%)



Fig. 4. Examples of different abnormal flexion creases from the investigated contingent

Table 2. Frequency of the type I (Ia + Ib) of palm flexion creases in other European populations

Population / Study	Gender	Number	Percent
Romanian M. Weninger, 1953	Males	521	5.37
	Females	557	2.69
Austrian M. Weninger, L. Navratil, 1957	Males	316	4.11
	Females	270	1.85
Romanian M. Dumitrescu, 1964	Males	2535	3.59
	Females	2659	1.99
French M. Lestrangé, 1966	Males	696	4.02
	Females	952	1.47
Czech V. Hajn, 1984	Males	300	1.49
	Females	300	1.16
Czech V. Hajn, A. Gasiorowski, 1995	Males	400	0.75
	Females	400	0.75
Pole V. Hajn, A. Gasiorowski, 1995	Males	300	1.16
	Females	300	0.83
Bulgarian S. Tomujova, 2000	Males	413	1.58
	Females	403	1.09
Bulgarian the present study	Males	1160	2.29
	Females	1268	1.91

elaborated by some authors concerning other European populations [5, 6, 9, 14, 15, 16]. From Table 2 could be seen that in males the frequency falls within the limits from 0.75% till 5.37%, and in females – from 0.75% till 2.69%. In our investigation the tendency remain the same, i.e. the frequency of this type abnormal crease in males to be a little bit higher.

Conclusion

The frequency of the established abnormal flexion creases in healthy Bulgarians is very low. Our investigations, as well as such ones made by foreign authors concerning the palmar flexion creases in patients having different inborn and hereditary diseases show a high frequency of the abnormal types being relative to the patients [2, 10, 12, 13, 14]. That's why we would like to recommend a detailed clinical, biochemical and genetic study concerning patients to be carried out when diversions from the normal palm flexion creases were established. In this way an early diagnostics, as well as the question whether a given disease has acquired or inherited etiopathology could be realized.

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