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MEDICINE

PRELIMINARY ANTHROPOLOGICAL RESEARCH ON THE MEDIEVAL POPULATION OF THE IAŞI CITY (NECROPOLIS OF THE "SF. NICOLAE" CHURCH – CIURCHI STREET, THE 16th – 18th CENTURIES)

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The osteological material discovered in the medieval necropolis (16th – 18th centuries) of the "Sf. Nicolae Church" situated in Ciurchi Street in Iaşi consists of over 500 human skeletons exhumed of about 300 inhumation graves. The preliminary anthropological analysis performed on only 28 skeletons (12 male and 16 female adult skeletons having belonged to persons over older than 20 years) shows a hypsicranic and metriocranic population with high waist, metriometopic (medium) or eurimetopic (broad) forehead and medium-sized occipital bone. Male skeletons are characterized by dolicochranian (long heads) and female skeletons by brachicranian.

The face is mesene, the eye sockets are mesoconch or hypsiconch and the nose leptorin or mesorine. The skeletons discovered belong to the Mediterranean – Dynaric type, but several elements of the Nordoid, Alpine and East-Europoid types were evidenced, as well.

Key words: Sf. Nicolae - Church, necropolis, anthropological analysis, 16th – 18th centuries.

1. INTRODUCTION

The archaeological research performed in 2007 by the Center of European History and Civilization (team leader: archaeologist C.S.I Mrs. Stela Cheptea) have led to the discovery of a necropolis containing over 500 human (both adult and child) skeletons of about 300 graves (separate graves or reburial of human remains) exhumed from the necropolis of the "Sf. Nicolae Ciurchi" Church, the city of Iaşi. Grave exhumation has been performed for the removal of the archeological findings, so that areas for habitation can be later built.

According to the information provided by authorized persons, in charge of this archeological excavation, the necropolis probably dates from the second half of the 16th century and the end of the 17th century or from the beginning of the 18th century, as the most recent coins found are from the first decades of the 18th century.

The anthropological research of this osteological material has a unique nature because up, to this moment, anthropological vestiges belonging to the medieval Iaşi have never been exhumed.

Situated in the center of Moldavia, the city of Iaşi was constantly attacked by the Tartar- Turkish and Polish invasions [9], which is a matter of special historical significance, as the research of the exhumed remains becomes even more important and the complex anthropological research becomes the object of interest for anthropologists, archaeologists and demographists.

2. MATERIALS AND METHOD

The preliminary anthropological study has been performed on 28 only skeletons that belonged to persons older than 20 years, namely – 12 male and 16 female skeletons. The skeletons were preserved so that they could be easily restored and completely analyzed and studied.

The scientific research has been accomplished on the basis of a thorough analysis of each and every skeleton, according to the recently used methodology. As a consequence, a series of biometrical and morphological characteristics have been established, that pointed out, eventually, the general anthropological features of the population group inhumed in a particular area of the necropolis.

Prior to beginning the study of the osteological material, the soil was washed, the main parts of each and every skeleton were marked and restored (the skull, the facial skeleton, the mandible, the long bones, the coxal bones, etc.) and the skeletons that lacked certain bones, were eventually completed by using a molding device.

The next step consisted of the determination of gender and age at the time of death, by the methods and techniques recommended by Brothwell, Bruzek, Mays, Schmitt, Walrate, White and Folkens [5, 6, 13, 15, 17, 18].

The anthropometric and conformational study regarding each and every skeleton has been completed by the techniques of Martin [12] and the dimorphic scales of Alexeev [1] and E. von Eickstedt [10] while, for calculating the medium size, the archaeologists used the charts of Bach, Breitinger, Manouvrier and Trotter-Glesser [2, 4, 11, 16].

Although the number of skeletons that formed sample study material, both male and female skeletons, has no statistical value, statistical analysis of the main sizes and indices, and calculation of the means and sigmas and classification (according to categories) of the indices were performed, for a correct establishment of the main features characterizing the segment of population under study.

3. RESULTS AND DISCUSSION

3.1. FEATURES OF THE NEUROCRANIUM

3.1.1. Biometrical Data

The statistical parameters regarding the main sizes and indices analyzed are listed in Table 1, and indices classification is shown in Figures 1 to 9.

Table 1

Statistic values of the main, absolute and relative, cephalo-facial and stature dimensions

Martin No.	Character	Male			Female		
		N	M	δ	N	M	δ
1	G-op	10	177.3	8.29	15	171.86	9.81
8	Eu-eu	10	140.80	8.85	16	139.00	5.81
9	Ft-ft	12	97.00	5.51	15	94.32	4.10
10	Co-co	11	120.91	8.07	13	117.50	3.95
12	Ast-ast	11	107.45	5.26	16	110.29	7.05
20	Po-b	7	115.71	5.02	13	111.78	3.83
45	Zy-zy	5	125.40	10.43	9	118.60	3.95
47	N-gn	6	116.33	8.98	7	110.00	3.60
48	N-pr	10	65.95	6.47	10	64.00	3.33
51	Mf-ek	10	40.70	2.87	10	38.83	2.94
52	Height of the orbit	9	33.39	2.12	10	33.17	1.43
54	Al-al	10	24.50	1.65	8	24.63	1.70
55	N-ns	9	51.89	4.78	9	46.00	3.69
63	Enm2-enm2	8	38.81	4.57	4	38.25	3.64
65	Kdl.-kdl.	5	119.80	9.47	8	114.83	4.93
66	Go-go	9	101.44	7.28	10	96.14	7.16
68	Depth of the mandible	9	69.33	4.24	11	65.06	5.54
69(1)	Height at the g.m. level	10	31.35	2.54	12	30.50	2.97
69(3)	Thickness at the g.m. level	10	11.50	1.70	13	11.22	1.49
	Stature	11	168.24	3.61	14	159.94	6.50
8/1	Cranial index	10	79.51	5.25	14	80.82	6.40
20/1	Auricular –long. index	7	64.50	2.58	11	66.07	3.37
20/8	Auricular- transv. index	7	80.51	2.85	12	79.67	4.26
9/10	Frontal-transversal index	11	80.53	2.79	12	80.97	3.63
9/8	Frontal-parietal index	10	68.25	2.60	14	68.15	3.20
12/8	Parietal-occipital index	9	75.65	3.17	15	79.62	4.88
47/45	Total facial index	4	93.26	2.66	7	93.20	2.79
48/45	Facial superior index	5	54.70	5.18	9	53.80	2.85
52/51	Orbitary index	9	82.43	7.02	10	85.75	5.70
54/55	Nasal index	9	47.59	6.67	8	54.84	6.07
45/8	Cranial-facial transv. index	5	87.52	3.98	9	87.07	2.57
69(3)/69(1)	Mandibular robustness index	10	36.63	3.92	12	38.07	5.75

The neurocranium of the male skeleton is characterized by a medium cranial index situated in the dolichocranic category. The index can be found in the hyperbrachicran category, as well, in this respect.

In the female sample, this index is brachycranic. The variation is, in this respect, more complex, as hyperdolichocranic and even ultrabrachycranic features are to be found.

In male skeletons, the dolichocranic shapes were spotted in 40% of the samples, followed by the brachycranic shapes (30%). Regarding female skeletons, the maximum percentage applies to the mesocranic and brachycranic forms (28.57% for each category) (Fig. 1).

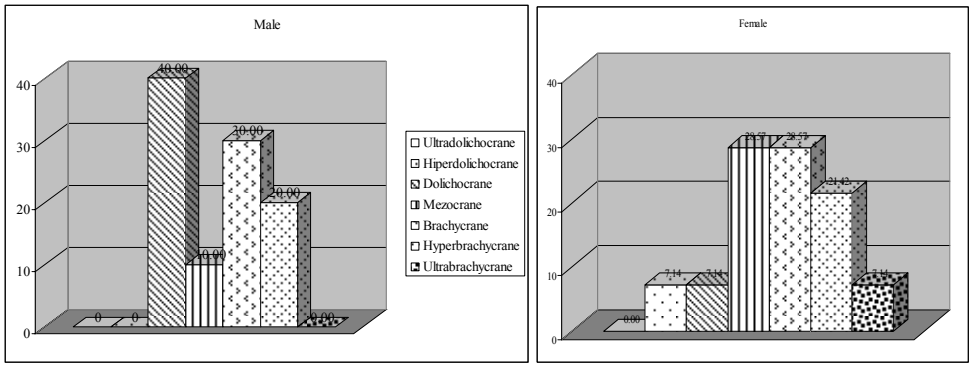

Fig. 1. Cephalic index.

Brachycranic skulls can be spotted in both genders, in almost equall ratios (30.0% in male and 28.57% in female skeletons), while the extreme types (hyperbrachycranic and ultrabrachycranic) are more common to women (28.56 % in female skulls and only 20% in male skulls).

In both a sender, cranial height (porio-bregmatic) belongs, to the medium size category, but there is a noticeable difference, due to sexual dimorphism. The longitudinal poriobregmatic index belongs to the hypsicranic type, in both genders.

This fact can be better observed when analyzing the classification of this index (Fig. 2), which clearly shows that the hypisicrane category is more likely to be spotted in both female and male skulls (100% at men and 81.81% at women), while the orthocranic category is characteristic only 18.18% for women.

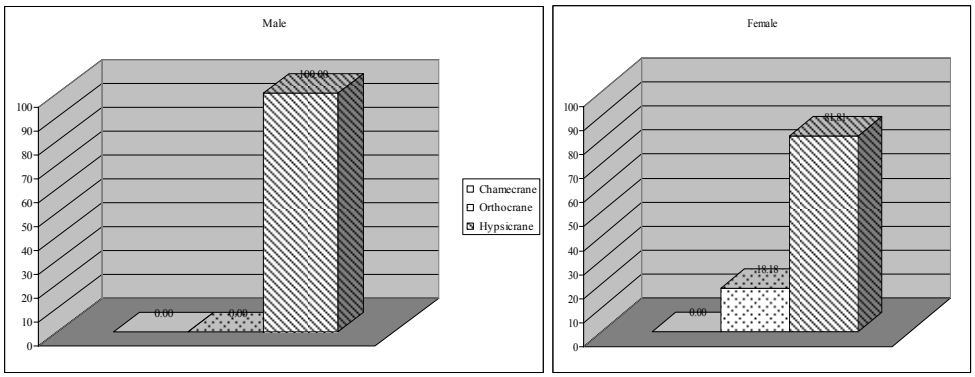

Fig. 2. Vertico-longitudinal index (po-b/g-op).

The distribution according to category (Fig. 3) shows that the transversal porio-bregmatic index (po-b/eu-eu) is metriocran, in both men and women (57.14% and 50.0%).

The tapeinocranic type (lower category) snows, in both genders, almost equal percentages (42.85 % for men and 41.66% for women), while the acrocranic type represents only 8.33% in women.

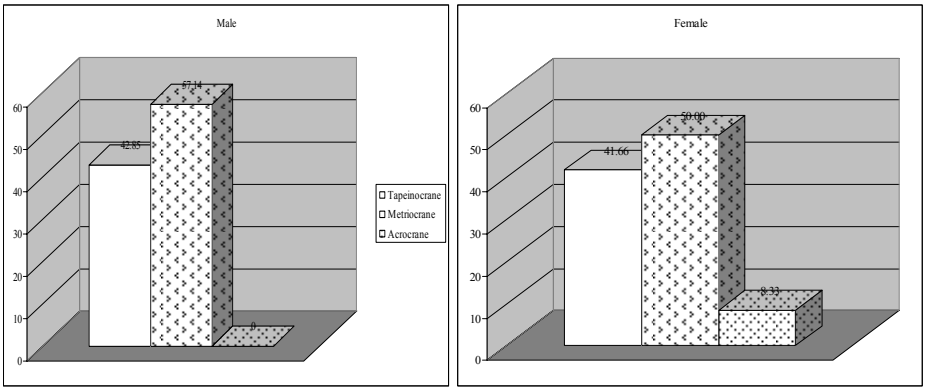

Fig. 3. Vertical-transversal index (po-b/eu-eu).

The minimum diameter of the forehead is middle-sized (97 mm for male and 94.32 mm for female skeletons). This means that the frontal-parietal index belongs to the metriometopic type both for men (68.25) and women (68.15) – which means a middle range broad forehead.

Regarding the classification of this index, it is clear that both women and men are distributed in all three categories, the metriometopic one showing the maximum percentage, followed by the eurymetopic and stenometopic categories (Fig. 4).

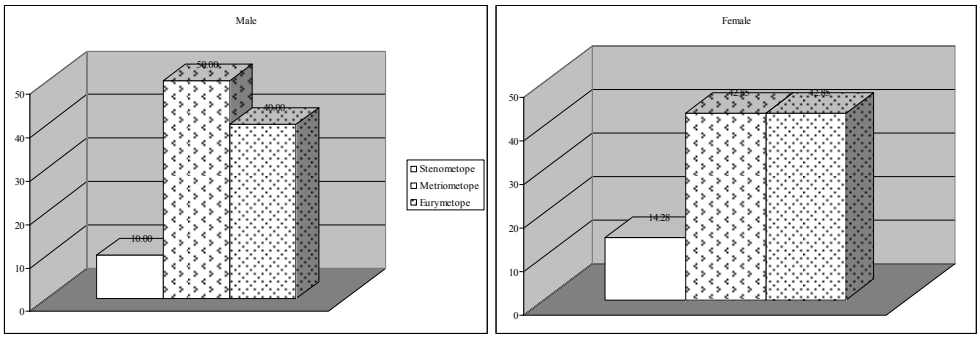

Fig. 4. Frontal-parietal index (ft-ft/eu-eu).

The maximum diameter of the forehead is large, in both genders (120.91 mm for men and 117.50 mm for women) and the transversal frontal index (with the shape of a forehead, depending on the form of the temporal ridges) indicates an oval-shaped forehead, both for men and women.

In most cases, the occipital bone, this bone is, middle-sized for males and wide for females. The parieto – occipital index is has average sizes in men and large sized in women. The middle occipital bone is spotted at 77.77% of the male skulls and at 40% of the female skull, followed by the large and very large occipital bone, discovered especially at women (53.33%) and only in 11.11% at men. The narrow occipital bone was spotted in 11.11% of the men and 6.66% of women skulls, respectively (Fig. 5).

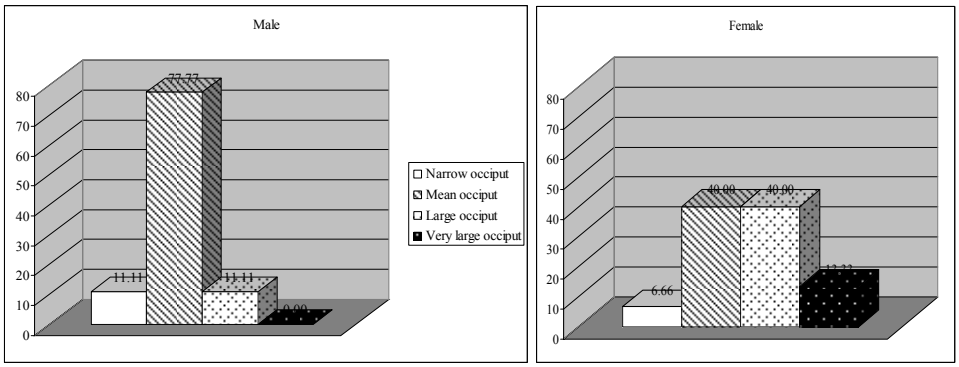

Fig. 5. Parietal-occipital index.

3.1.2. Morphological Features

When the skull is viewed from above (in *norma verticalis*), the shape of the neurocranium is predominantly ovoid, for both genders (about 45% in male and about 54% in female skulls), followed by the sphenoid shape – more rarely occurring in male specimens (40%), comparatively with the female ones (45%).

The rhomboid shape has been more often found in male skulls than in female ones (12% for the former, in comparison to 7% for the latter).

When the skull is viewed from behind (in *norma occipitalis*), the neurocranium is predominantly house-shaped (100% in male specimens and 72.33% in female specimens). The neurocranium may have the shape of a bomb, in *norma occipitalis*, but in only 26.66% of the female specimens.

As to the degree of curvature of the occipital bone, in most of the male skulls, the occipital bone is mid curved (about 63%), being followed by the curved shapes (about 25%) and by the slightly curved ones (about 12%).

A significant number of female skulls, whose occipital bone is mid curved (about 47%), flattened (about 27%), very curved (20%) and eventually slightly curved (about 6%) was also discovered.

In male skulls the glabelar relief developed in four stages (1-4) and the skulls discovered achieved stages 2,3 and 4 of development (92% of all specimens) and only 8% of them achieved only the 1st stage of development.

In female skulls, the glabelar relief reached only the first three stages of development (1 – 3), as follows: 1st stage – 47%; 2nd and 3rd stages (20% each).

3.2. THE FACIAL SKULL

3.2.1. Biometrical Data

The total face height is defined as a middle category average value, for both male and female skulls, while the upper face height is, on the average, of lower category for male skulls and of middle category for female skulls. The maximum width of the face belongs to the lower category, for both men and women. Therefore, the upper facial index (n-pr/zy-zy) belongs to the mesenic (60% of the male specimens and 55.55% of the female specimens) and leptenic category, respectively (20% of the male skulls, 44.44% of the female skulls) (Fig. 6).

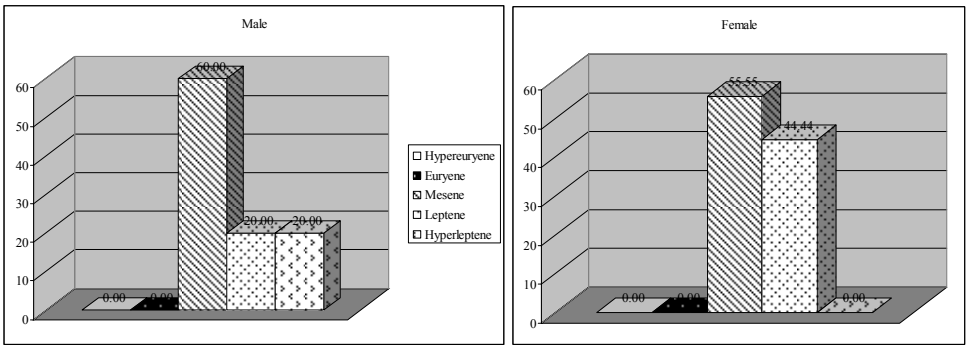

Fig. 6. Superior facial index.

The orbital diameters have variable sizes (40.70 mm for male skulls and 38.83 mm for female ones). The orbit heights belong to the middle category, for both men (33.39 mm) and women (33.17 mm).

Classification of the orbital indices (Fig. 7) indicates that the male orbits mostly fall into the mesoconch-medium (66.66%) and hypsiconch-high (22.22%) categories. The cameconch orbits were found at only 11.11% of the series male.

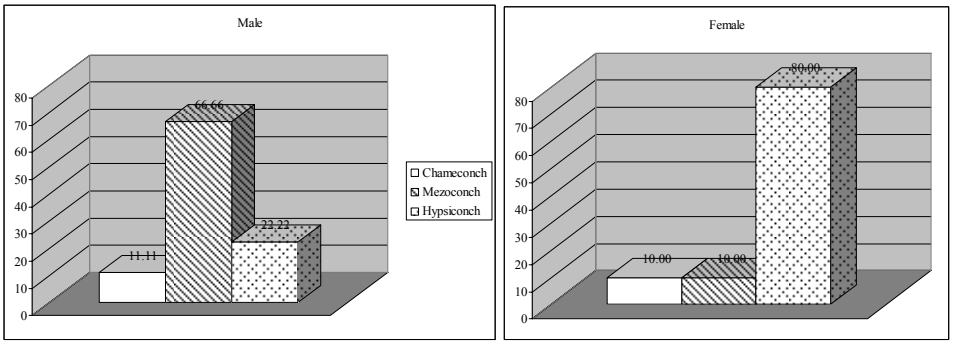

Fig. 7. Orbitary index.

The female orbits are prevailingly of hypsiconch type (80%), followed by the mesoconch and cameconch types (10% each).

Similar values were found between the average sizes of the nose, in male and female skulls. Female noses are shorter in length (46 mm) than the male ones (51.89 mm), but in width, they have nearly equal values in both genders (24.50 mm for men and 24.63 mm for women).

The nasal indices distribution on the categories of the classical scales (Fig. 8) indicates maximum frequencies in the leptorrhine category for male (66.66%) and mesorrhine category for female (50.00%).

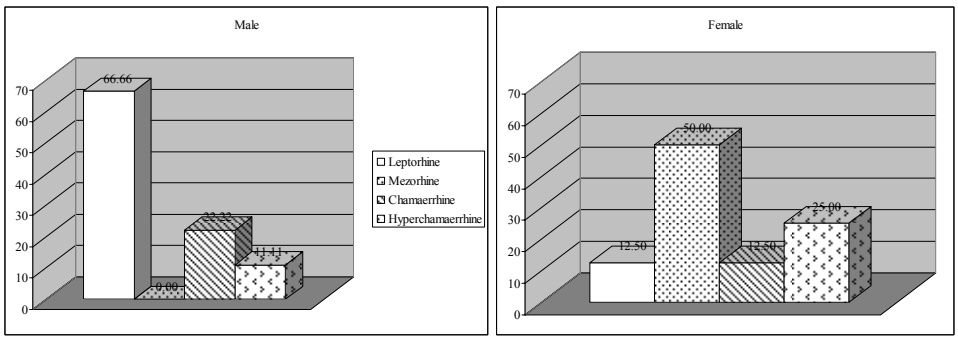

Fig. 8. Nasal index.

The length of the mandible is, on the average, middle-sized for both men (119.80 mm) and women (114.83 mm) and the depth of the mandible is very low for both sexes (69.33 mm in male specimens and 65.06 mm in the female ones). The robusticity indices belong to a lower category, regarding both sexes, however female average robusticity is higher with 1 IU than the male one.

The gracile and very gracile mandibles reach relatively higher frequencies (40% for men and 46.15% for women), followed by the moderate frequencies (about 37% for men and about 38% for women).

3.2.2. Morphological Features

The malar bones are more developed in male skulls (54.54%), in comparison with female skulls (18.18%), the second place being held by the upper ones (45.45 of female specimens and 27.27% of male specimens), followed by the lower (narrow) ones – 18.18 % of male and 36.36% of female specimens). Their common and most frequent display is intermediately and frontally (66.66% of the male and 90.90 % of the female skulls). The temporalized malar bones were spotted in 25% and 9.09% of male and female skulls, respectively.

The canine fossa is better outlined in male specimens, comparatively with the female ones.

The shape of the pyriform aperture belongs to the anthropine type and the prenasal and ditched fossae were found only in male skulls.

The nasal spine is usually medium sized, both for male (38%) and female skulls (40.00%). The poorly developed forms come next (gr. 2: 23% and 14%, respectively), followed by the extremely poorly developed forms (gr. 1: 31.5% and 28.50%, respectively).

The palate is, in most of the cases, paraboloidally and ellipsoidally-shaped, the latter being specific for female skulls. In most cases, the palate is seldom outlined.

The average stature (calculated according to the length of the limb bones) can be arranged at the lower limit of the over-middle category, for male skeletons, and at the lower limit of the category of high waists, for female skeletons. The stature of the skeletons falls into the tall category (36.36% of the male specimens and 35.71% of the female ones) – Fig. 9.

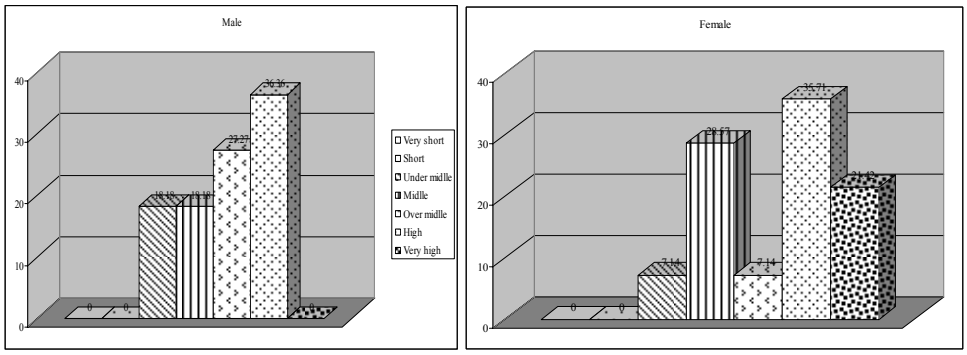

Fig. 9. Stature.

Female skeletons of the middle category hold a percentage of 28.57, followed by the "very high" category (21.42%) and under-middle and over-middle categories, with equal percentages (7.14%). Regarding the male skeletons, the over-middle category holds 27.27 % of the specimens, followed by the middle and under-middle categories (18.18% for each one).

4. CONCLUSIONS

The skeleton specimens dating from the medieval period (16^{th} – 18^{th} centuries) discovered at the "Sf. Nicolae" – Ciurchi in Iaşi are defined by means of certain indices. The dolichocranic skulls are typical for male skeletons and brachicranic skulls for female skeletons. The longitudinal porio-bregmatic index belongs to the hypsicranic type and the transversal porio-bregmatic index is usually metriocranic and tapeinocranic. The forehead is metriometopic or eurimetopic and the occipital bone is medium-sized or broad. The facial skeleton is mesenic and the nasal cavity is predominantly leptorrhinic and mesorrhinic. The index of the orbits is generally hypsiconch and mesoconch. In line with the average values, male skeletons can be classified as supra-middle category and the female high category.

The individual classification of the main individual biometrical and morphoscopic features reveals the presence of a bioanthropological polymorphism specific to small settlements while in the process of urbanization. Based upon the analysis of the main biometrical and morphological indicators, it has been determined that the discovered skeletons belong to the Mediterranoid – Dinaric type. The elements of the Dinaric type are better exposed on male skeletons, while the Mediterranean features are typical for female skeletons. There are also certain secondary elements that belong to the Nordoid, Alpine and East-Europoid types. The anthropological structure of the exhumed skeletons shows certain similarities with that of other Medieval peoples situated in the Central Moldavian Plateau (Gherăeşti [7], Răchiteni [14], Bârlad [3] and Ştefăneşti [8]).

The complex anthropological analysis of the whole osteological material and especially of the biological structure of the anthropological facies, the study of the skeletal disorders and the confirmation of the archeological data obtained in this study offer enough information, so that accurate conclusions can be drawn about the population inhumed in this Medieval necropolis.

Authors contributions: Vasilica-Monica Groza (first author) – 50%; Georgeta Miu (second author) – 25%; Angela Simalcsik (second author) – 25%.

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