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OSTEOMETRIC VARIATIONS OF PIG (*SUS SCROFA DOMESTICUS*) IN NEOLITHIC SAMPLES FROM EAST AND SOUTH-EAST OF ROMANIA

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Introduction

This study summarizes osteometric data for pig from East and South-East of Romania (samples dating from Neolithic period) and intends to characterize and distinguish interpopulational differences. In the case of the Neolithic settlements, the abundance of domestic pig remains is an indicator of the sedentary life of the communities. This study is part of a project focused on Neolithic migrations approached from archaeozoological perspective. The geographical area to investigate is situated in the South-East of Europe, the first neolithised area of our continent; in time, it is situated in the VI-IV millennia B.C., at the Eastern limit of the block of cereal-based civilisations, which had already imposed themselves in Central and South-Eastern Europe. A series of interesting phenomena regarding the relationships between the sedentary Neolithic communities and the nomadic ones, coming from the North Pontic steppes can be studies in this region. The project has as main objectives: identification of animal migrations using elements of the species biogeography; distinguish of the metric variations on animal populations; recognising animal populations and their movements using non-metric characters; evidencing genetic variation in animal populations.

http://aleximreh.wordpress.com/page/11

Material and Method

The knowledge of the metric variations of skeletal remains from archaeological sites is precious for the distinction of morphological types and sexes. For this purpose we used relevant measurements recorded on different anatomical elements which were undergone statistical analysis. The osteologic material was excavated from archaeological sites belonging to Cucuteni Culture: Hoiseşti (Neamt County), Feteşti (Suceava County) and Poduri (Bacau County) .

The measurements were made to the nearest 0.5 mm with a calliper rule for following anatomical elements: astragalus calcaneus, coxal, cubitus, humerus, the proximal phalanx, the lower and upper M_3, radius, and omoplat. Linear measurements were defined according to von den Driesch (1976).

Material used for comparison comes from the neolithic sites belonging the following cultures: Starcevo Cris, Vinca, Petresti, Gumelnita, Ariusd, Hamangia, Salcuta, Cotofeni, Toarte pastilate and Tiszapolgar. The statistical analysis was performed using SPSS version 13.00.

Results

The complete metapodials providing data on withers height are few, therefore the most often the withers height is established by means astragalus and calcaneus: we present in the figure 1 the variability of the withers height of pigs from Neolithic period using astragalus.

Descriptive analysis of different linear measurements is show in Table 1.

Figure 2 illustrates the average and coefficient of variation for some of the anatomical elements in comparison with material from other Neolithic archaeological sites.

The statistical analysis revealed the significant differences in dentition especially in mandible (one-way ANOVA): simphysis length (F=15.73, p=0.00) and length of the third molar (F=5.28, p=0.00); the highest values were recorded in material belongs to Precucuteni Culture (Figure 2, 3).

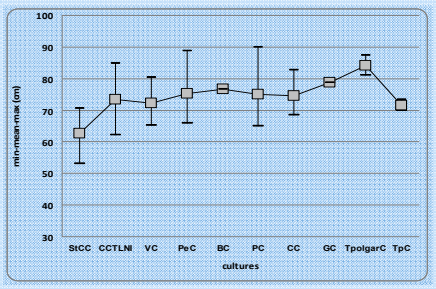

Figure 1: *Sus scrofa domesticus* – variation in withers heights

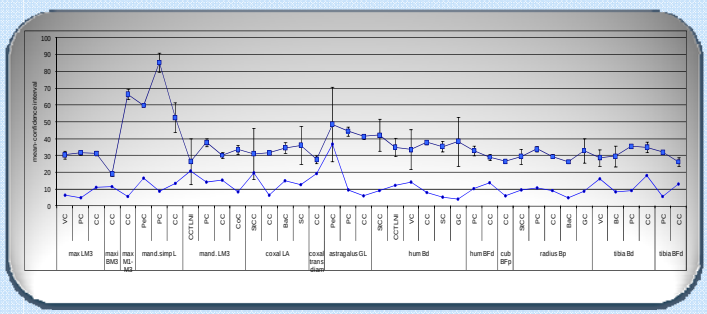

Figure 2: Mean box and coefficient of variation (CV%) in pigs

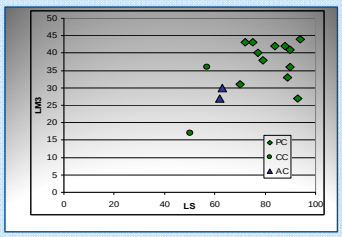

Figure 3: Diagram of correlation between simphysis mandible and length of third molar

Table 1: Descriptive analysis. Abbreviations: n - number of bones examined; SD -standard deviation; CV - coefficient of variation in %, Conf. Level - confidence level a mean of population); GL / GB - greatest length / breadth; Bp / Bd - breadth of the proximal / distal part; BFp / BFd - breadth of the facies articularis proximal / distal; SD Smallest breadth of diaphysis; LM_3 and BM_3 Length and breadth of the 3 rd molar; LG - Length of the glenoid cavity (scapula) BG - Breadth of the glenoid cavity; Cultures: StCC Starcevo Cris, VC Vinca; PeC Petresti; CC Cucuteni; GC Gumelnita; AC Ariusd; TpCTioarte pastilate; TpolgarC Tiszapolgar; HC Hamangia; SC Salcuta; CoC Cotofeni.

		Statistic Indices							
Anatomical Elements	Statistic Indices	n	M	SE	SD	Min	Max	CL(95.0%)	CV %
	VC	5	30.40	0.86	1.92	29.00	32.50	2.38	6.31
	PeC	2	27.15	-	-	26.30	28.00	-	-
	PC	7	31.71	0.57	1.50	30.00	34.00	1.38	4.72
	CC	27	31.29	0.66	3.41	26.50	40.50	1.35	10.91
	GC	1	36.00	-	-	-	-	-	-
maxilla LM_3	AC	2	28.50	-	-	27.00	30.00	-	-
maxilla BM_3	CC	16	18.96	0.54	2.16	16.30	24.00	1.15	11.38
	CC	8	66.46	1.31	3.71	63.00	72.00	3.10	5.58
maxilla M_2-M_3	AC	2	63.00	-	-	61.00	65.00	-	-
	StCC	1	58.60	-	-	-	-	-	-
	CCTLNI	2	63.25	-	-	63.00	63.50	-	-
	PeC	3	59.67	5.70	9.87	53.00	71.00	-	16.53
	PC	10	85.40	2.41	7.63	72.00	94.00	5.46	8.94
	CC	5	52.64	3.17	7.08	47.00	65.00	8.79	13.45
	TpC	1	72.80	-	-	-	-	-	-
mandible L simfiza	CCTLNI	3	26.33	3.17	5.48	20.00	29.50	13.63	20.83
	PC	22	37.86	1.15	5.40	26.00	44.00	2.39	14.26
	CC	27	30.38	0.90	4.65	17.00	36.30	1.84	15.42
	PeC	2	30.70	-	-	21.00	40.40	-	-
	TpC	1	40.50	-	-	-	-	-	-
	AC	2	28.50	-	-	27.00	30.00	-	-
	T polgarC	2	34.00	-	-	31.00	37.00	-	-
mandible LM_3	CoC	6	33.50	1.12	2.74	30.00	38.00	2.87	8.17
	StCC	3	31.10	3.54	6.13	26.30	38.00	15.22	19.70
	HC	2	33.85	-	-	31.70	36.00	-	-
	CC	33	31.05	0.36	2.07	26.00	36.00	0.73	6.55
	BaC	13	34.62	1.43	5.14	27.00	41.00	3.11	14.85
	SC	3	36.17	2.62	4.54	31.00	39.50	11.27	12.54
	GC	2	34.00	-	-	32.00	36.00	-	-
coxal LA	AC	1	32.00	-	-	-	-	-	-
coxal transvers diameter	CC	22	27.64	1.14	5.34	5.00	31.50	2.37	19.32
	StCC	1	36.00	-	-	36.00	36.00	-	-
	CCTLNI	2	46.05	-	-	45.80	46.30	-	-
	VC	1	45.00	-	-	-	-	-	-
	PeC	5	48.54	7.99	17.86	37.00	79.50	22.18	36.79
	PC	12	44.50	1.24	4.30	35.00	49.00	2.73	9.65
	CC	11	41.32	0.74	2.46	37.00	45.00	1.65	5.96
	GC	2	37.90	-	-	37.30	38.50	-	-
astragalus GL	TpC	2	45.20	-	-	44.00	46.40	-	-
	StCC	3	42.10	2.22	3.85	38.30	46.00	9.57	9.15
	CCTLNI	5	34.98	1.91	4.27	27.80	39.30	5.30	12.21
	VC	3	33.50	2.75	4.77	28.00	36.50	11.85	14.24
	CC	30	37.78	0.56	3.08	28.00	43.50	1.15	8.15
	PeC	2	37.20	-	-	34.60	39.80	-	-
	SC	4	35.38	0.94	1.89	33.50	37.00	3.00	5.34
	AC	2	37.00	-	-	35.00	39.00	-	-
	CoC	2	37.50	-	-	34.00	41.00	-	-
humerus Bd	GC	2	38.45	1.15	1.63	37.30	39.60	14.61	4.23
	PC	7	32.86	1.26	3.34	28.00	38.00	3.09	10.16
humerus BFd	CC	26	29.05	0.79	4.03	18.00	36.00	1.63	13.86
cubitus BFp	CC	16	26.53	0.40	1.59	24.00	30.00	0.85	6.00
	StCC	4	29.50	1.40	2.80	27.00	33.50	4.45	9.49
	CCTLNI	1	25.50	-	-	25.50	25.50	-	-
	BC	1	28.00	-	-	28.00	28.00	-	-
	PC	24	33.88	0.74	3.60	27.00	37.00	1.52	10.64
	CC	22	29.41	0.57	2.66	24.00	34.50	1.18	9.03
	PeC	2	29.70	-	-	25.90	33.50	-	-
	SC	2	28.50	-	-	27.00	30.00	-	-
	BaC	9	26.22	0.43	1.28	24.00	27.50	0.98	4.87
	GC	3	32.83	1.69	2.93	29.50	35.00	7.28	8.92
	T polgarC	2	27.25	-	-	26.00	28.50	-	-
radius Bp	CoC	2	30.75	-	-	29.50	32.00	-	-
	CCTLNI	2	32.80	-	-	29.00	36.60	-	-
	VC	6	28.67	1.89	4.62	21.50	36.00	4.85	16.12
	PeC	1	29.00	-	-	-	-	-	-
	BC	3	29.67	1.45	2.52	27.00	32.00	6.25	8.48
	PC	38	35.44	0.52	3.19	26.70	39.00	1.05	9.00
	CC	19	34.99	1.45	6.33	25.00	46.00	3.05	18.09
	GC	1	26.70	-	-	-	-	-	-
tibia Bd	SC	2	27.00	-	-	26.50	27.50	6.35	-
	StCC	2	33.00	-	-	32	34	12.71	-
	CCTLNI	1	23.20	-	-	-	-	-	-
	PeC	1	28.00	-	-	-	-	-	-
	PC	11	32.00	0.56	1.84	30	36	1.24	5.76
	CC	10	26.29	1.10	3.47	21	31.5	2.49	13.21
tibia BFd	CC	16	43.47	1.46	5.84	33.00	52.00	3.11	13.44
	TpC	2	41.65	-	-	37.50	45.00	-	-
	GC	3	35.73	-	-	28.70	41.90	-	-
phalanx 1 GL	CC	16	21.34	0.33	1.31	20.00	25.00	0.70	6.15
phalanx 1 GB	CC	16	20.36	0.40	1.61	17.00	22.50	0.86	7.89
phalanx 1SD	CC	16	16.81	0.23	0.91	15.00	18.50	0.49	5.42
omoplat LG	CC	12	33.92	0.96	3.32	28.00	38.00	2.12	9.82
omoplat BG	CC	12	30.13	1.14	3.95	23.00	35.00	2.51	13.11
omoplat SLC	CC	11	26.51	0.99	3.28	20.00	30.00	2.21	12.38

Conclusion

These results highlight the presence of pig regional structures whose size varies but that fits the "palustris" type which characterized the Neolithic period. The high degree of variability in characters which were analyzed is due the presence of individuals resulting from crossbreeding with wild types.

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