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MELANOMA IN GREY OLD KLADRUBER HORSE

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INTRODUCTION

The grey coat colour in horse is a result of the progressive greying - this known phenomenon is typical for some breeds or lines but is not exclusive. The grey is born coloured as brown or black and greying is a loss of pigment in hair, although the skin remains pigmented. In older greys could be seen loss of pigment in skin on distal body parts called vitiligo. The Old Kladruber horse bred in Bohemia nearly 450 years as a coach horse for Imperial Court in Vienna is among those breeds like Lipizzan horse, Camargue horse etc. From genetic point of view grey shows an autosomal dominant inheritance – epistatic action of dominant G alela. Grey horses are born coloured and progressively loss of pigment in hair is unfortunately associated with the possible development of melanoma (Seltenhammer, 2000). The causative relationship for these traits is not known yet (Rieder, 2000). Jeglum (1999) found melanoma in horses older than 6 years regardless to sex, in grey horses older than 16 melanoma incidence could be 60 – 70% (Fleury et al., 2000; Seltenhammer et al., 2003). Many reports have estimated that as many as 80% of older grey horses will develop dermal melanomas, with the majority of these being benign, although some of these histologically benign dermal melanomas may eventually metastasize and thus should be considered
potentially malignant. Papers published up to this time on occurence of melanoma in grey horses deals mainly with Camargue horses (Fleury et al., 2000), Lipizzan horse (Curik et. al., 2002; Sölkner et al., 2004).This paper is the first study of melanoma in Old Kladruber Grey Horse.

MATERIAL AND METHODS

The data collection is carried out currently in grey variety of Old Kladruber horse in stud Kladruby n. L. and stud Benice and is currently extended to other breeders of this breed. Data were recorded after detailed inspection of 148 horses older the 3 years of age regardless the sex. The occurrence of melanoma and vitiligo was evaluated by adspection and palpation on typical places - perianal, perineal and anal regio, and facial parts of head. We have used the system according to Sőlkner et al. (2004) for the occurrence and quantification of melanoma and vitiligo.

Fig. 1: Classification and incidence of melanoma in grey horses (Sőlkner et al.,2004)

Grade of melanoma	Description
0	Free of melanoma.
1	Early stages of plaque-type or nodule of Ø 0.5 cm.
2	Several nodules of Ø 0.5 cm or one nodus of Ø 2 cm.
3	One or several nodules of Ø 5 cm, or subcutaneous.
4	Extensive melanoma covered with skin, signs of destruction, metastasis.
5	Exophytic growth of tumours, vet surface, cachexia, disorders.



Fig. 2: Classification and incidence of vitiligo (Sőlkner et al., 2004)

Grade of vitiligo	Description
0	Full pigmentation.
1	Small depigmented patches.
2	Greater continuous depigmented areas of skin.
3	Extensive depigmented areas of skin.

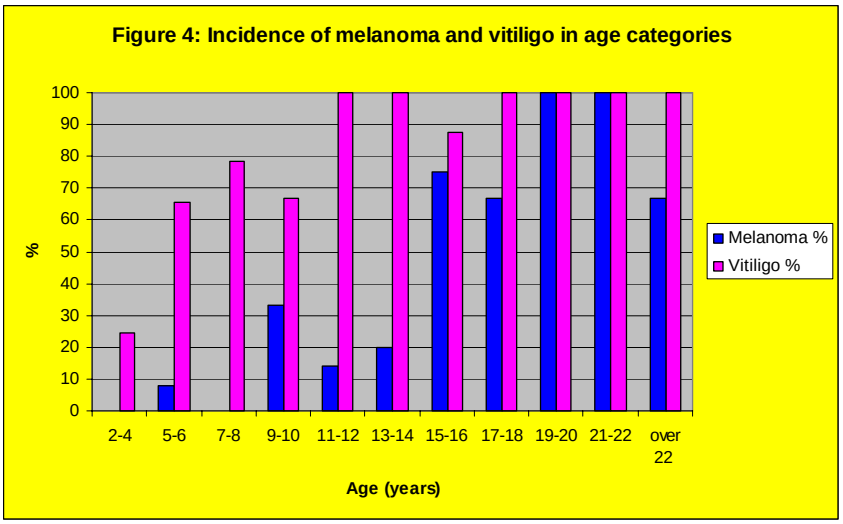


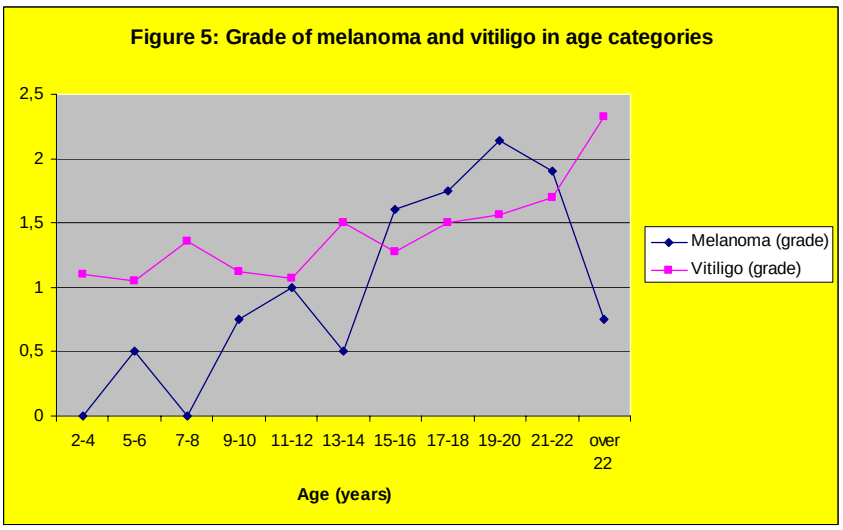
RESULTS

The inspection of 148 grey Old Kladruber horses of different age confirmed the incidence of melanoma in breed under study. Occurrence of melanoma is summarized in fig. 3 with the respect of the age of horses under search.

Fig.3: The occurrence of melanoma and vitiligo related to age

Age (years)	Number of horses	Melanoma records	Grade of melanoma	Vitiligo records	Grade of vitiligo
3 - 4	61	0	0	15	1.1
5 - 6	26	2	0.5	17	1.05
7 - 8	14	0	0	11	1.36
9 - 10	6	2	0.75	4	1.12
11 - 12	7	1	1	7	1.07
13 - 14	5	1	0.5	5	1.5
15 - 16	8	6	1.6	7	1.28
17 - 18	6	4	1.75	6	1.5
19 - 20	7	7	2.14	7	1.56
21 - 22	5	5	1.9	5	1.7
nad 22	3	2	0.75	3	2.33





The global occurrence of melanoma 20.27% in horses of two greatest studs is substantially lower than 55% in Lipizzan horses (Curik et al., 2002) or Camargue horses (Fleury et al., 2000). But overall incidence of melanoma in Kladruber greys under study at the age of 15 and older reached 82.5% which is in agreement with literature results (87.5%) above mentioned. The grade of melanoma is in population under study also lower than in Lipizzans – in 5 horses only we found grade 3 (3.3%), grade 4 was detected in 1 mare, grade 5 was not detected at all. Melanoma could be found in Old Kladruber greys mostly at the age of 6, but grade 2 and higher is detected at the age 15 and more.
The occurrence of vitiligo in Kladruber greys is higher then that of melanoma, the grade of vitiligo is growing with the age – the highest level of vitiligo occurs in horses older 22 years, which is corresponding with literature.
The influence of line origin on melanoma was tested (see fig. 4), but differences between lines did not reach statistical significance by χ^2test.

Fig 4: The occurrence of melanoma in lines

	G	Gss	F	S	Ru	Total
Number of horses	32	50	27	25	14	148
Melanoma	3	11	5	8	3	30
Occurrence (%)	2.02	7.4	3.3	5.4	2.02	20.2
Occurrence in line (%)	9.37	22.0	18.5	32.0	21.4	

Lines: G – Generale, Gss – Generalissimus, F –Favory, S - Sacramoso, Ru – Rudolfo

CONCLUSION

This paper provides first reliable evidence of assumed occurrence of melanoma in grey variety of Old Kladruber horse as revealed in other breeds (Lipizzan, Camargue). This preliminary study confirms in phenotype of 148 horses of two greatest studs an occurrence of melanoma corresponding in the main features with the literature information The occurrence of real melanoma was detected by adspection and palpation using 3 grades of the scale used. The incidence of melanoma in Kladruber horse is also related to age – tumour occurs first mostly at the age of 5-6 years. Horses older than 15 years develop melanoma over 80 % which is consistent with literature. Grade 3 was found in 5 horses only, grade 4 was noticed in 1 mare, grade 2 is detectable at the age 17 and more – total occurrence of melanoma seems to be in this breed lower than that in other grey breeds. The occurrence of melanoma in relation to line origin of the horse could be phenotyphically seen, but the difference is not statistically significant. Detection of vitiligo showed the occurrence in range 50 – 100% in the age category and is growing with the age of horses – maximum is reached after 22 years of age.

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