

Rearing of an Orphan Foal

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Summary: The aim of this study was to describe the ability of successful growth of an orphan foal. The orphan foal was grown with mare milk replacer and nurse mare which was in non-lactation. Body measurements of the orphan foal and half siblings of his, suckled foals, were recorded until 6th month-old. Body weight, wither height, rump height, chest circumference and front cannon bone circumference of orphan foal, half sib father (HSF) and half sib mother (HSM) at 6th month-old were 231, 249.5 and - kg; 140, 144.5 and 135.5 cm; 141.5, 145 and 136.75 cm; 137, 145 and 142.5 cm; 17, 17.5 and 17.5 cm, respectively. While body weight was slightly lower than suckled foal, skeletal growth ratio was normal. This slightly low body weight can be tolerated for orphan foal. In addition, diarrhea, septicemia and pneumonia etc. was not encountered during feeding program.

Key Words: Growth ratio, horse, orphan foal, rearing

Anasız Bir Tayın Büyütülmesi

Özet: Bu olguda anası ölmüş bir tayın başarılı bir şekilde büyütülme imkanı araştırılmıştır. Anasız tay kısrağın süt tozu ve konsantre tay yemi ile beslenerek, laktasyonda olmayan bir kısrağın sütü ile birlikte büyütülmüştür. Anasız tayın, baba bir (aynı yıl) ve ana bir (önceki yıllardaki) kardeşlerinin vücut ölçüleri 6 aylık yaşa gelene kadar kaydedilmiştir. Bu taylara ait 6. ay vücut ağırlıkları sırasıyla 231, 249.5 ve - kg; cidago yükseklikleri 140, 144.5 ve 135.5 cm; sağrı yükseklikleri 141.5, 145 ve 136.75 cm; göğüs çevresi uzunlukları 137, 145 ve 142.5 cm ve ön incik çevresi uzunlukları ise 17, 17.5 ve 17.5 cm olarak tespit edilmiştir. Anasız tayın vücut ağırlığı aynı dönemdeki baba bir kardeşlerinin ağırlıklarından biraz düşük olurken, iskelet gelişimi beklenen düzeyde olmuştur. Vücut ağırlığındaki bu kısmi düşüklük anasız yetiştirme için tolare edilebilir olarak düşünülmektedir. Ayrıca, besleme programı süresince ishal, septisemi, pneumoni vb. herhangi bir hastalık tablosu ile karşılaşılmamıştır.

Anahtar Kelimeler: Anasız tay, at, büyüme hızı, yetiştirme

Introduction

Sometimes being orphaned may be an important problem in foal breeding. The practice of rearing foals in the absence of their mares is considered to be very delicate, because of without maternal imprinting the welfare of the animal might be compromised, with the consequent development of behavioral disturbances (10). First of all, orphan foals require continuous monitoring of food-care for the need of adjusting the changed diet. Concurrently, these foals need a nurse mare due to the extreme stress because of being separated from its mare (3). Some of diseases may be triggered because of these factors may also result with low growth rates in orphan foals.

In this case report it was aimed to evaluate the growth rate of an orphan sport horse foal which was fed with mare milk replacer in contrast with half siblings which were reared with their mares.

Cases: Mother of a one month-old foal, which was colt and sport horse breed was died due to stomach rupture. After die, the orphan foal was reared with nurse mare, which was 21 years-old and nullipar, for preventing of social loneliness. Three days adaptation period was set for this nursing live. They were controlled in this adaptation period during by care assistant. After adaptation period, all horses were pastured on fields. At night, mares and foals were sheltered in box, which was used for 1 mare and 1 foal.

Feeding: The orphan foal was feed with mare milk replacer. Ingredients and contains of mare milk replacer were shown in Table 1. The trick to feeding milk replacer to foals is to feed small amounts often. For foals being raised on milk replacer, it is essential to carefully monitor the amount and timing of feedings and to pay close attention to provide a balanced diet as foal is weaned from the milk replacer (1,8).

Table 1. Ingredients and contains of mare milk replacer

Ingredients		Contains
Protein (%)	26	- Skimmed milk powder
Oil (%)	12	- Fat filled skim milk powder
Fibre (%)	0	- Whey powder
Ash (%)	7.4	- Fat filled whey powder
Copper (mg/kg)	25	- Dextrose
Selenium (mg/kg)	0.4	- Starch
Add to Vit K, B1, B2, B6, B12, Folic acid, Nicotinic acid, Biotin, Cobalt, Iron, Zinc, Manganese, Iodine		- Vitamin and minerals

Table 2. Feeding program

Feeding period (month)	Pelleted concentrate feed (g/day)	Dried meadow grass(g/day)	Milk replacer*	
			Quantity (lt/day)	Meals per day
Birth – 1**	-	-	-	-
1 – 1.5	400	250	10	12
1.5 – 2	450	300	13	12
2 – 2.5	540	400	16	10
2.5 – 3	600	450	19	10
3 – 3.5	720	500	21	8
3.5 – 4	720	500	23	8
4 – 4.5	900	600	26	8
4.5 – 5	1200	900	26	6
5 – 5.5	1350	1000	23	6
5.5 – 6	1500	1200	23	6

*: The milk replacer was prepared with 130 g of dry milk replacer added to 1 lt of water at 30°C.

** : There are not feeding record in this period because mother was live.

Table 3. Ingredients of pelleted concentrate feed

Ingredients	Quantities
Dry matter (%)	88
Crude protein (%)	14
Crude cellulose (%)	10
Crude ash (%)	12
NaCl (%)	0.7
Calcium (%)	1.0 – 1.7
Phosphor (%)	0.5
Sodium (%)	0.2 – 0.4
Manganese (mg/kg)	40
Zinc (mg/kg)	50
Lysine (%)	0.45
Methionine (%)	0.25
Cystine (%)	0.20
Vit A (IU/kg)	15000
Vit D3 (IU/kg)	1500
Vit E (mg/kg)	150
Metabolic energy (kcal/kg)	2700

It is recommended that orphan foal should be fed at the rate of 100 mL/kg body weight/ day with mare milk replacer. Orphan foals between birth to two months of age consume an average of 12.5 liters of milk replacer daily (6).

In this case, mare milk replacer intake was gradually decreased to 5th month-old and finished at 6th month-old. The orphan foal was gradually adapted at pelleted concentrate feed and was crop on the paddock after dying of mother. The feeding program with mare milk replacer and pelleted concentrate feed were shown at Table 2. Orphan foals should be introduced to pelleted concentrate feed when they are 2 to 3 months of age. The concentrate should contain 14 – 18 % protein and have added calcium, phosphor, copper and zinc in a formulated designed specifically for growing horses. Concentrates should be fed at the rate of 0.25 to 1 % of body weight in growing foal (9,13). The amount of pelleted concentrate feed to foal was adjusted based on periodic evaluation of the foal's body weight and visual appraisal of body condition. Ingredients of pelleted concentrate feed were shown at Table 3.

Body Measurements: Body weight, wither height, rump height, chest circumference and front cannon bone circumference (FCBC) were monthly measured for growth rate determination until 6 month-old. Same data were collected from 4 half sibling that were 2 half sibling from same father (HSF) and 2 half sibling from same mother (HSM). HSF were born within ± 3 days and had same environmental conditions and same gender (♂) with orphan foal. HSM gave birth 2 and 3 years ago before the orphan foal. However, foals were treated similarly between each calendar year. Also the one of HSM was in the same sex (♂) and the other foal was in different sex (♀). Body weights for HSM couldn't be obtained from old record. The body measures were appeared at Table 4.

Discussion and Conclusion

The weaning normally occurs between 4 and 6 months of age for the domestic horse (12). According to this general rule, orphan foal was fed with mare milk replacer until 6th month and was adapted to concentrates. Feeding program was

Table 4. Body measures

Foals	Measuring period	Body weight (kg)	Wither height (cm)	Rump height (cm)	Chest circumference (cm)	FCBC (cm)
Orphan foal	Birth	61	106.5	108	88	13
HSF (n=2)		57	103.75	104.5	87	13
HSM (n=2)		-	103.5	105	91.5	13.75
Orphan foal	1st month	100.5	118	120	106.5	15
HSF (n=2)		115.25	117	119	108.75	15
HSM (n=2)		-	117.75	120.5	108	14.5
Orphan foal	2nd month	129	126	126.5	110	15
HSF (n=2)		152.25	126.5	128	119.5	15.75
HSM (n=2)		-	122	123.5	120	15.75
Orphan foal	3rd month	163	130	131	119	15.75
HSF (n=2)		178.75	129.75	131.25	128.25	16.5
HSM (n=2)		-	125.5	127.25	126	16.25
Orphan foal	4th month	191.5	134	135	124	16
HSF (n=2)		208.5	135.5	135.75	134	17
HSM (n=2)		-	127.75	130	132.5	16.75
Orphan foal	5th month	217	137	138	131	16.5
HSF (n=2)		238	139.5	141	139.5	17.5
HSM (n=2)		-	132	134.5	139	17.25
Orphan foal	6th month	231	140	141.5	137	17
HSF (n=2)		249.5	144.5	145	145	17.5
HSM (n=2)		-	135.5	136.75	142.5	17.5

Values of HSF and HSM are arithmetic mean.

practiced similarly with reported works (3,9,13) both mare milk replacer and introduced pelleted concentrate feed. Total daily milk replacer intake in the present study was between 10-13% body weight, well below milk intakes of 20-27% body weight reported for mare-suckled foals (7). Water intake by the orphan foal could not be calculated because it had free access to water. When looking at growth ratio in the orphan foal, sufficient growth ratio shows according to HSF and Knight and Tyznik (6). This condition has been shown that the orphan foal had sufficient intake of dry matter via milk replacer, pelleted concentrate feed, dried meadow grass and pasture.

Body weight was slightly lower than HSF, which was similar observed by others (2,4,6,13). Decreasing of body weight has been noted in dependent with changed diet and increased stress in orphan foals (4). The skeletal growth rates were suitable for orphan foals because body measures except chest circumference, which was similar to raise orphan foals on milk replacer (2), were

generally similar to HSF. Furthermore, wither height and rump heights in the present study were higher than the data presented by Hintz et al. (4), Knight and Tyznik (6) and Thompson (11). Similarly, recorded data for the orphan foal were also higher than HSM. This may have been related to the different gender (♀) of one of HSM from the present orphan foal. Several previous studies have also suggested that on the average colts are larger than fillies at birth and that the difference increase during the growth period (4).

Although catch, diarrhea, ulcers, colic, pneumonia and septicemia are common and potentially deadly problems for orphan foal (2,5,8), those complications were never observed in this case.

In conclusion, the growth rates presented in this case report could help to define growth patterns of orphan foals. These data may be helpful to design feeding and management schemes. Although the data presented are from only one foal, these values may useful about orphan foal growth. While

skeletal growth was normal compared to suckled foals, factors such as changed environmental conditions and extreme stress from loneliness gave rise to lower body weight than suckled foals.

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