

Baby Giraffe Rope-Pulled Out of Mother Suffering from Dystocia without Proper Restraint Device

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Abstract : A 4-year-old female reticulated giraffe (*Giraffa camelopardalis reticulata*), at Seoul Zoo, Gwacheon, Korea had a male calf with no help of proper restraint devices. The mother giraffe was in a danger of dystocia more than 7 hours in labor after showing the calf's toe of the foreleg which protruded from her vulva. After tugging with a snare of rope on the metacarpal bone of the calf and pulling it, the other toe emerged. Finally, with two snares around each of metacarpal bones, the calf was completely pulled out by zoo staff. After parturition, the dam was in normal condition for taking care of the calf and her progesterone hormone had also dropped down to a normal pre-pregnancy.

Key words : giraffe, dystocia, rope, parturition.

Introduction

Approaching the megavertebrate species such as elephants, rhinoceroses and giraffes without anesthetic agents or proper physical restraint devices is very hard, and it is even more difficult when it is necessary to stay near to the animals for a long period (1,2,5). With no proper restraint devices, serious situations like dystocia could have the mother and baby into a critically danger and irreversible status (6,12-14).

At Seoul Zoo, May 26, 2008, a primiparous mother giraffe had been exhausted and suffering for a long time even after a baby giraffe's forelimb appeared out of the mother's vulva. About 7 hours in labor passed before it was decided that a rope be used which is supposed to wrap around the metacarpal bone of a forelimb and be pulled until the other forelimb showed up in order to eventually make sure the baby giraffe has proper presentation in the reproductive track. Very soon, the other forelimb appeared after just several attempts to pull it out and then whole body was out of his mother's body. The baby giraffe was perfectly healthy without any physical abnormalities. This case report describes the procedure of giraffe dystocia finally overcome by zoo staff in detail.

Case report

A pregnant giraffe was transported from a local zoo with no notification of being pregnant. Therefore, until close to the due date, nobody realized she had been expecting a baby

giraffe. Because a giraffe is generally known as having such an uneventful gestation and not clearly showing appearances of body with which zoo keepers notice impending parturition until just several weeks before parturition. A few of zoo keepers were not suspicious of her being pregnant when they saw the extension of the giraffe's abdomen around 2 weeks before parturition. On May 12, 2008, the giraffe was isolated from other giraffes and observed everyday. Sometimes fetal kicks were noticeable and the size of udder and teats seemed almost same as other female giraffes (8)(Fig 1). But the shape of udders changed to clearly show four partitions when the due date came close.

On May 26, a front hoof of the calf was visible 25 minutes after the apparent rupture of fetal sac. With a 20 cm length of the front hoof exposed out of the mother giraffe's vulva, no further progress was made even though the mother continued to pace, sit, stand, and bear down more than 5 hours. The duration of labor in giraffe varies, but is about 2 hours 45 minutes on average, labors lasting longer than 5 hours would be the time for concern (9). The rapid pacing performed throughout the delivery is considered very typical in the parturition of giraffe (8). At this time, the decision was made to intervene with the delivery because more than 7 hours passed and no further progress was made with the calf, and the mother giraffe was primiparous. After making a snare of rope for fastening to the front leg of the calf, one of zoo staff was sitting at the rim of the birthing stall and waiting for the chance to cuff the leg with a snare of rope while letting a zoo keeper herd the mother giraffe along the raised rim of enclosure (Fig 2). Finally, cuffing the leg with a snare was done, and releasing the rope before going down to the floor was followed by pulling the rope with other zoo keep-

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Fig 1. Appearances of udder, abdomen and teats of mother giraffe before parturition.



Fig 2. Recaptured picture of a staff with a snare of rope in his hands at the birthing stall.



Fig 3. Afterbirth expelled 10 hours after parturition.

ers. Matching pulls to the time of the mother giraffe's bearing down, the rope was pulled on very carefully. After several pulls, the other front leg appeared and just when the mother giraffe spread her hind legs, cuffing the other leg of the calf with another snare of rope was succeeded. Just less than 3 minutes was needed for completely removing the whole body of the healthy baby male giraffe, about 57 kg. The mother showed normal attention to her calf and began licking him. The baby giraffe tried to stand up on his own feet, repeatedly tumbling down and standing up. About 7 hours later, he started to suckle and the afterbirth was expelled 10 hours after parturition (Fig 3). For analyzing

fecal progesterone of mother giraffe, the feces had been collected May 24 to June 30. The progesterone concentration was dropped to pre-pregnancy right after parturition (4,7)(Fig 4). The analyses of sex hormones were performed based on the method of Time-Resolved Fluoroimmunoassay (TR-FIA) (11). Briefly speaking, for extraction of estradiol and progesterone, 0.2 g of dried feces was shaken for 10 minutes in 10 ml of ether and 2 ml of PBS. After centrifugation at 4 °C for 10 minutes at 1500 g (MX-301, Tomy Co. Japan), the tube was stored at -80 °C overnight. Next day, the supernatant of the tube was transferred to a 15 ml of conical tube. In ventilation room (KMC, Vision Sci Co. Korea) the supernatant was evaporated under nitrogen gas at 36 °C in a water bath

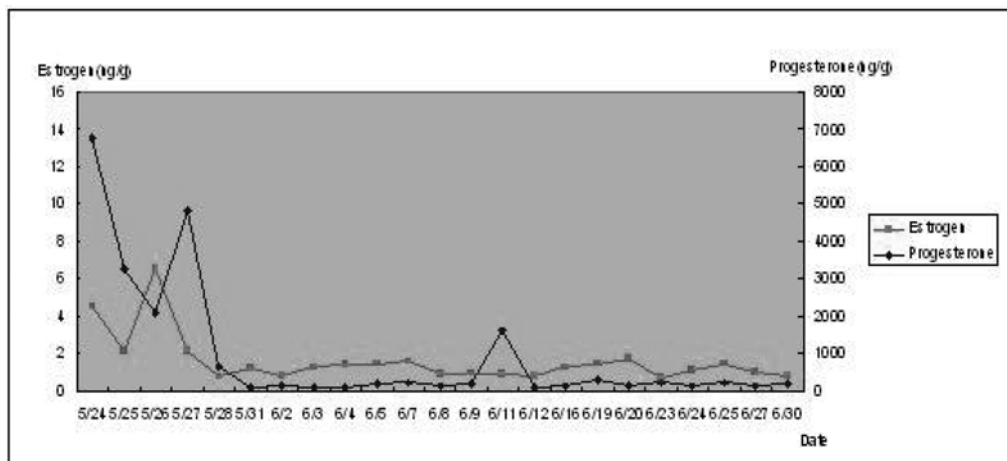


Fig 4. Fecal estrogen and progesterone concentration of mother giraffe around parturition.

before a metabolic layer was decanted into test tubes. When TR-FIA was used, Tris buffer was selected as reconstitution buffer. After adding 1 ml of Tris buffer into the dried sample of cornical tube, 50 µl of which was assayed by TR-FIA with commercial assay kit designed for the human hospital market (DELFA estradiol and progesterone kit, Wallac, Turku, Finland) according to the manufacturer's instruction. Reconstituted fecal extract was dispensed into 96-well plate pre-coated with secondary antibody. The plate was incubated for 2 hours at room temperature. After washing it (Automatic washer, Wallac, USA), enhancement solution was added. Fluorescence detection was done with a Wallac Fluorometer (Victor 2D, Wallac, USA) after enhancement. The parallel between the displacement curve of serially diluted reference standard and the serial doses of fecal extract was confirmed. The hormone assay was done in duplicate. The minimum detectable level of TR-FIA was pg/well for estradiol and progesterone.

Discussion

The gestation of giraffe is 450 days and estrus cycle is every 15 days. It is difficult to predict the day of delivery only with physical characteristics such as appearances of vulva, udder and abdomen size (Fig 1). In addition to these physical appearances, behavioral changes must be considered to recognize impending delivery. Because behavioral changes in feeding such as increased water intake, decreased food intake, fetal kicking and pacing clearly indicate impending parturition (8).

In this case, no chemicals or physical devices were used to hold the mother giraffe, and the baby giraffe was birthed out of her mother using a classic method of rope-pulling which has been widely used at dairy farms. The mother giraffe has not been trained at all for basically examining physical conditions. Therefore, it was impossible to confirm if some birth trauma before or after parturition and abnormal fetal presen-

tations were present in reproductive track. Based on a lot of amniotic fluid when the baby giraffe was pulled out, it was considered that the reproductive track of mother giraffe was little injured.

The presence of observers might delay the birth and if it is the first pregnancy it could last longer (13). Zoo staff were staring at the dam excluded alone at the birth stall through a monitor set at a remote office. The process of parturition was not intervened until the decision of helping the dam give birth was made.

About how to decide the beginning time of dystocia and when to engage in the process of parturition, several opinions are still in controversy. It is recommended that obstetrical examination be carried out after 2 hours of active parturition without noticeable signs of progress (3). However, a healthy calf was born after approximately 15 hours of parturition with no fetal protrusion during the first 14 hours (8). In this case, being delayed more than 7 hours after the dam started bearing down was the main reason zoo staff intervened in the process of abnormal parturition.

Fetal malposition or malpresentation caused most of giraffe dystocia occurred in the United States (10). We thought it was very lucky to have a baby giraffe without any physical restraint devices. The reasons of dystocia in this case are not clear but all we can suggest are noises around animal enclosure, absence of good care of the dam before parturition and being primiparous. The facilities for physical restraint of zoo animals must be available not to lose opportunities of obstetrical examinations, especially in emergent situations like dystocia. In conclusion, facilities, especially various kinds of restraint device must be set up in order to sustain the mission of modern zoos and succeed in captive breeding and species conservation of zoo animals.

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기린 난산에서 물리적 보정장치 부재시 밧줄을 이용한 태아 견인

용환율¹ · 박석현 · 최명근 · 정소영 · 구대창 · 유종태 · 유미진 · 유미현 · 어경연 · 여용구 · 강신근 · 김현열

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요 약 : 서울동물원의 4세령, 초산 그물무늬기린이 난산 상황에서 특별한 보정장치 없이 수컷 새끼기린을 분만하였다. 어미 기린은 7시간 이상 외음부에 새끼 기린의 앞발이 나온 상태에서 분만의 진전 없이 난산 위기에 처해 있었다. 외음부에 나온 태아 앞발 중수골에 로프 올가미를 한 후 잡아당겨 반대쪽 발목을 견인하였다. 한 개의 로프 올가미를 더 만들어 반대쪽 발목에 걸어 어미 기린의 자궁수축 리듬에 맞춰 로프를 잡아당겨 건강한 새끼 기린을 얻었다. 분만 후 어미 기린은 정상적으로 새끼를 돌봐주었고 분변 내 호르몬 수치를 검사한 결과 분만 후 프로제스테론 수치는 분만 전 상태로 떨어졌다.

주요어 : 기린, 난산, 로프, 분만.