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**The Death of a Newborn
Chimpanzee at Mahale:
Reactions of its Mother and
Other Individuals to the Body**

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INTRODUCTION

Approximately 50% of infant chimpanzees in

Mahale die before weaning¹. The causes of preweaning infant death include endemic disease, maternal inexperience, poor nutrition, stillbirth, and infanticide.

Since Jane Goodall² and Toshisada Nishida³ began their long-term research on wild chimpanzees, researchers have known that female chimpanzees often transport the bodies of their dead preweaned infants for a period extending from a couple of days to several months. Matsuzawa observed a mother who was unable to abandon her 2-year-old daughter's body and speculated that this was because of her maternal affection⁴. Hosaka *et al.* documented five cases of reactions to dead infants by mothers and other chimpanzees⁵. One case implied that adult males would cannibalise the carcasses of newly deceased infants. Another case described the longest recorded transporting of a dead infant by its mother, at least 3.5 months. A recent report from Mahale noted that seven infant chimpanzees died in a flu-like epidemic in 2006, two of which were then carried by their mothers⁶.

Here I report another case of a chimpanzee mother carrying the body of her dead newborn. I also describe the reactions of other chimpanzees to the body of the newborn. Given the dearth of literature on this topic, this study contributes to researchers' understanding of the reactions of chimpanzees faced with the death of a conspecific.

STUDY SITE AND CHIMPANZEES

Chimpanzees of M group in the Mahale Mountains National Park, Tanzania, were studied. I studied Vera and her dead newborn male using the *ad libitum* observation method. Other chimpanzees that interacted with the pair were two young adult males (Cadmus and Primus), one juvenile male (Teddy), one older adult female (Nkombo), and one juvenile female (Carmen). Carmen was the younger sister of Cadmus and had no younger siblings herself.

OBSERVATIONS

At about 16:50 on 10 October 2008, as the core party of M group reached Kanyana Research Station, Vera appeared after 2 days' absence carrying the body of her firstborn around her neck. Vera had immigrated into M group in 2006 and had seemed nulliparous. This delivery was likely Vera's first since joining the group, which is consistent with past data from Mahale that immigrant females usually need 2 years to conceive their first infant¹.

The infant may have been stillborn, because its head seemed constricted at the nose point. At the constriction point, the skin of the mouth was pressed toward the chin. I hypothesised that this constriction was unlikely to have resulted from a normal birth, but rather may have occurred while the infant was passing through the pelvic canal. The infant had a red lesion on its head, but this did not seem fatal. When Vera was found carrying the infant a couple of days after delivering it, the body had not been

cannibalized; it smelled rotten but had no visible bite marks. The infant was thought to be male because there was no evidence of the characteristic sexual skin of a female.

At first, Vera walked silently out of sight behind the others with her dead infant. She was discovered by Cadmus, who started making intimidating displays toward her. Primus joined in. Cadmus then mounted Vera, who fled, leaving the body.

At 16:55, Cadmus, Primus, Carmen, and Teddy sat surrounding the body. Cadmus touched the body with his index finger, lifted its leg to sniff the leg, anus, and penis and widened the anus to inspect it. Vera tried several times to retrieve the body but her efforts were in vain because she could not approach Cadmus.

At 16:59, once Cadmus left, Carmen began carrying the body in her mouth, followed by Teddy. After a minute, Carmen climbed up a tree, carrying the body; here she touched and pinched it around the anus. After 30 s, she climbed down and continued to carry the body, again followed by Teddy. While Carmen was carrying the body, Cadmus was nearby, watching the body.

At 17:03, when Carmen passed Cadmus with the body, Cadmus started running to follow her. Carmen soon stopped, at which point Cadmus caught up with her and sniffed the body. With Cadmus beside her, Carmen started touching and pinching the skin and mouth of the body and inspecting the anus, as Cadmus had done. She also stepped several times. Cadmus left Carmen and the body again.

At 17:06, Cadmus made an intimidating display and thus regained the body. He touched and sniffed it, just as he had done before. Carmen sat beside Cadmus with her hand on his shoulder, watching what he was doing. Cadmus paused for a while and then left, leaving the body.

At 17:07, Carmen retrieved the body and began treating it violently, dragging it and hitting it against the ground. She stepped and stomped on it repeatedly. As a result, the surface hair of the body became damaged; it was discoloured a dark green discoloration and gave off a bad smell. Primus, who was nearby, did not touch the body. Teddy followed Carmen and appeared to want a chance to touch the body, but he was not successful. Nkombo approached the body to sniff it but departed soon afterward.

At 17:09, Carmen picked up the body and ran away out of our sight. She reappeared with the others 30 min later, without the body.

DISCUSSION

If my assumption that Vera carried her stillborn infant is true, then this could be the first report on reactions to a stillborn infant by the mother and other chimpanzees. However, it is possible that the partially cannibalised newborn reported in Hosaka *et al.* could



Fig. 1. Cadmus peered into the dead body with his knuckles on it. His sister, Carmen, laid her hand on her brother's shoulder.

have been stillborn, although the authors presumed that it had been killed by some chimpanzee⁵. Roof *et al.* reported that about 7.5% of the first parity of captive chimpanzees result in stillbirths⁷. The rate of stillbirths among Mahale chimpanzees is unknown, but it seems natural that they should also deliver stillborn infants in the wild.

My observations reveal that a female chimpanzee can carry her dead infant even if insufficient time has passed to establish a strong mother-infant relationship. It is likely that Vera had carried the infant for 1 or 2 days before being discovered. She might have continued to carry the infant much longer had she not joined the other chimpanzees, considering that she tried to regain possession of the body several times.

Cadmus recognised the fact that the infant was dead and checked to see whether the body was fresh enough or too rotten to eat. It is possible that he was motivated by cannibalism, because adult male chimps have a well-known tendency to eat dead infants^{5,8}. Therefore, the body might have been cannibalised by other chimpanzees such as Cadmus if it had been found on the day of birth. However, it is unclear why Cadmus did not eat it. Possible explanations are putrefaction or some psychological conflict.

Carmen showed similar reactions to the body as her brother Cadmus. However, some of her reactions (e.g., treating the body like a toy, a play partner, or a live infant) can be interpreted as imaginative play. In addition, Carmen showed greater persistence for carrying the body than her brother did, which can be explained by the tendency of adolescent chimpanzees toward alloparental behaviour⁹.

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