
Postcranial anatomy of the late Miocene hippopotamoids from Toros-Menalla, Chad

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Résumé

Hippopotamoidea is a super-family of cetartiodactyls that are nowadays limited to two extant species: *Hippopotamus amphibius*, the common hippopotamus, and *Choeropsis liberiensis*, the Liberian hippopotamus. Restricted to Africa, these two mammals inhabit ecosystems closely linked to water, and are the only extant members of a specialized ecological guild called the large semi-aquatic herbivores. The bulk of the diversity of this super-family was composed by the paraphyletic anthracotheres, a geographically, temporally and ecologically more diverse group from which hippopotamids originated. Historically, the phylogenetical relationships of these taxa were debated, especially since the establishment of the clade Cetancodonta composed by cetaceans and hippopotamids. Studies have tried to help resolve these issues with the help of cranial, intra-cranial morphology and dental anatomy. Their postcranial anatomy has until now been mostly unexploited data, sometimes due to poor preservation. At Toros-Ménalla (TM), a Late Miocene fossiliferous area in Chad, the last African anthracothere *Libycosaurus bahri* has been found coexisting with the large hippopotamid *Hexaprotodon garyam*. Their coexistence in humid environments suggests some form of niche-partitioning. As a major way for an animal to interact with its environment, the locomotor apparatus is a great candidate to help clarify the phylogenetical issues cited previously but also to discuss functional and ecological considerations mentioned in the past literature. This study proposes an anatomical comparison between these two coexisting hippopotamoids and their closest extant ecomorph, the common hippopotamus. With the

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observation of characters on a sample of ca. 650 specimens, we setup a framework for the identification and differentiation of the postcranial skeleton of hippopotamoids, but we also denote the relevancy of the inclusion of postcranial skeleton in future phylogenetical analyses. Additionally, we discuss the postcranial anatomy of those taxa in the context of the environments of the African Miocene, allowing new functional and ecological interpretations for the interaction between hippopotamoids and changes in their wet environments, which remains a major driver in the evolutionary history of these large artiodactyls.

Mots-Clés: Paleocology, Phylogeny, Comparative anatomy, Messinian, Africa