

The aim of this study is to give a precise description of human hippocampal anatomy in view of neurosurgical progress and the wealth of medical imaging methods available. Two major problems render this study more difficult: (1) the complexity of the hippocampal structure, making it one of the most mysterious regions in the central nervous system and (2) the great confusion which plagues its terminology, a confusion which appeared in the earliest descriptions.

From those who have studied the history of hippocampal terminology (e.g., Vogt and Vogt 1937; Tilney 1939; Benninghoff 1940; Klinger 1948; Clara 1959; Meyer 1971), the views of Lewis (1923) have been chosen to be summarized here.

The first description of the hippocampus is credited to Arantius in 1587 (cited by Lewis 1923) who compared the protrusion on the floor of the temporal horn to a hippocampus, or sea horse (see Fig. 3.2). It should be noted, however, that he hesitated between the terms “sea horse” and “silkworm.” In 1729, J. G. Duvernoy (cited by Lewis 1923) first illustrated the hippocampus, and he, too, hesitated between “hippocampus,” “silkworm,” and even “dolphin.” In 1732, Winslow suggested the term “ram’s horn” (see Winslow 1752). *Hippocampus*, *silkworm*, and *ram’s horn* were thus the terms used at the end of this initial period, all based on the intraventricular appearance of the hippocampus.

During the same period, the term *cornu Ammonis*, cited by de Garengot (1742), could have been first described by members of the Alexandrian School of Medicine (300 BC–300 AD)

(Andersen et al. 2007) (Fig. 3.2). In ancient Egypt, the horns of the ram dedicated to the god Amon (or Ammon) were described as the *cornu Ammonis* (Ammon’s horn) (Fig. 3.2).

The term *pes hippocampi* was introduced next. Although it is not known who added foot to the hippocampus, it may be due to Diemerbroek (1672) (cited by Lewis 1923). The description of *pes hippocampi* is uncertain: In some cases, *pes hippocampi* is for the whole hippocampus (Kopsch 1940); for other authors, it may correspond to the anterior end (or head of the hippocampus), characterized by endoventricular sallies or *digitationes hippocampi* (Gertz et al. 1972; Williams 1995; Amaral and Lavenex 2007).

After these periods of confusion, the terminology that is currently most commonly used needs to be clarified. The name hippocampus applies to the entire ventricular protrusion. Thus, the hippocampus comprises two cortical laminae rolled up one inside the other: the *cornu Ammonis* and the *gyrus dentatus* (Figs. 4.1 and 4.2). The subiculum, or transitional cortex between *cornu Ammonis* and the rest of the temporal lobe, is sometimes viewed as part of the hippocampus, constituting a functional unit (Chronister and White 1975). However, since the hippocampus and subiculum do not form a distinct topographical unit, the subiculum is not included in this study. Anatomically and functionally, the hippocampus is also associated to the entorhinal, perirhinal, and parahippocampal cortices to form the *medial temporal lobe* (MTL) (Suzuki 2009).