

Learning Brainstem Anatomy: A Mnemonic Device

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INTRODUCTION

Memorization and integration of relevant factual knowledge remains a challenge for physicians in training, as well as for those in practice. For example, it has been well documented that retention of basic science knowledge deteriorates during undergraduate training [1]. Mnemonic devices are well-established teaching tools, and have been suggested as a means to increase retention. It has been demonstrated that middle-school

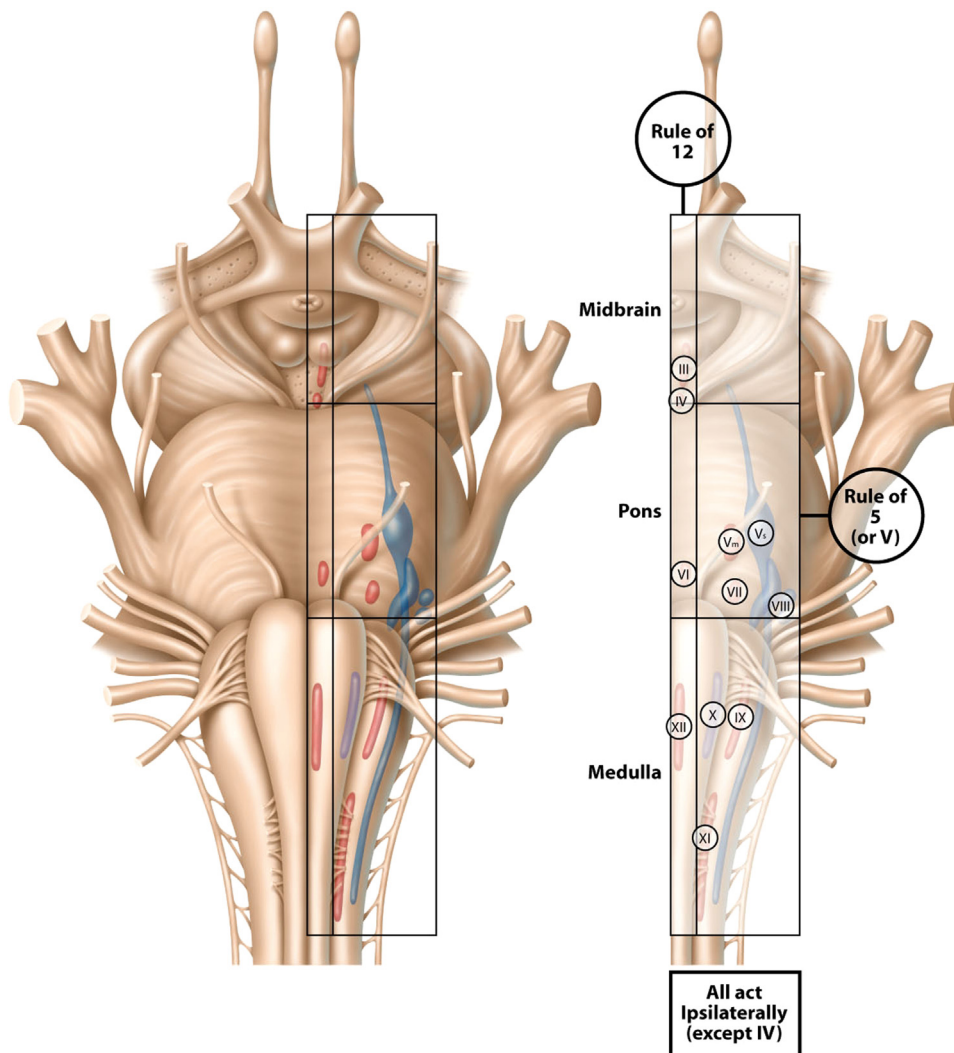


Figure 1. Rules of 5 and 12. These rules divide the brainstem visually into 6 sections. Application of the rules establishes the location of each of the cranial nerve nuclei in the appropriate level of the brainstem (Rule of 5), and establishes whether it is medial or lateral (Rule of 12).

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students who learn new vocabulary words with mnemonic aids display enhanced retention [2]. To recall the cranial nerves, most medical students could complete the 12-word phrase starting with “On Old Olympus’ Towering Top...”, or some other version. The efficacy of mnemonic devices has been studied in resident physicians to improve a wide variety of retention tasks, from improving skills in the diagnosis of otitis media [3] to the efficient structuring of clinical encounters [4,5]. A recent study demonstrated that pharmacy residents who were taught using a mnemonic recognized more drug-related problems in their intensive care unit patients than residents who were not taught mnemonically [6]. In this brief report, a 3-part simple mnemonic device is presented to aid in the retention of brainstem neuroanatomy—the Rule of 5, the Rule of 12, and the Rule of

M/S—which can assist physicians in establishing the location of brainstem cranial nerve (CN) nuclei and long tracts. The 3 rules, when combined and used in conjunction with the physical examination, can be useful in localizing brainstem pathology, and may constitute a useful teaching tool for medical educators.

Rule of 5

The first rule, the “Rule of 5” (or the Roman numeral “V”), establishes each of the cranial nerve nuclei in the appropriate level of the brainstem (The “Rule of 5” has previously been published, in an article read by one of the authors in or about 1985. Publication date is believed to be 1958. Extensive efforts to locate the original article failed). Every

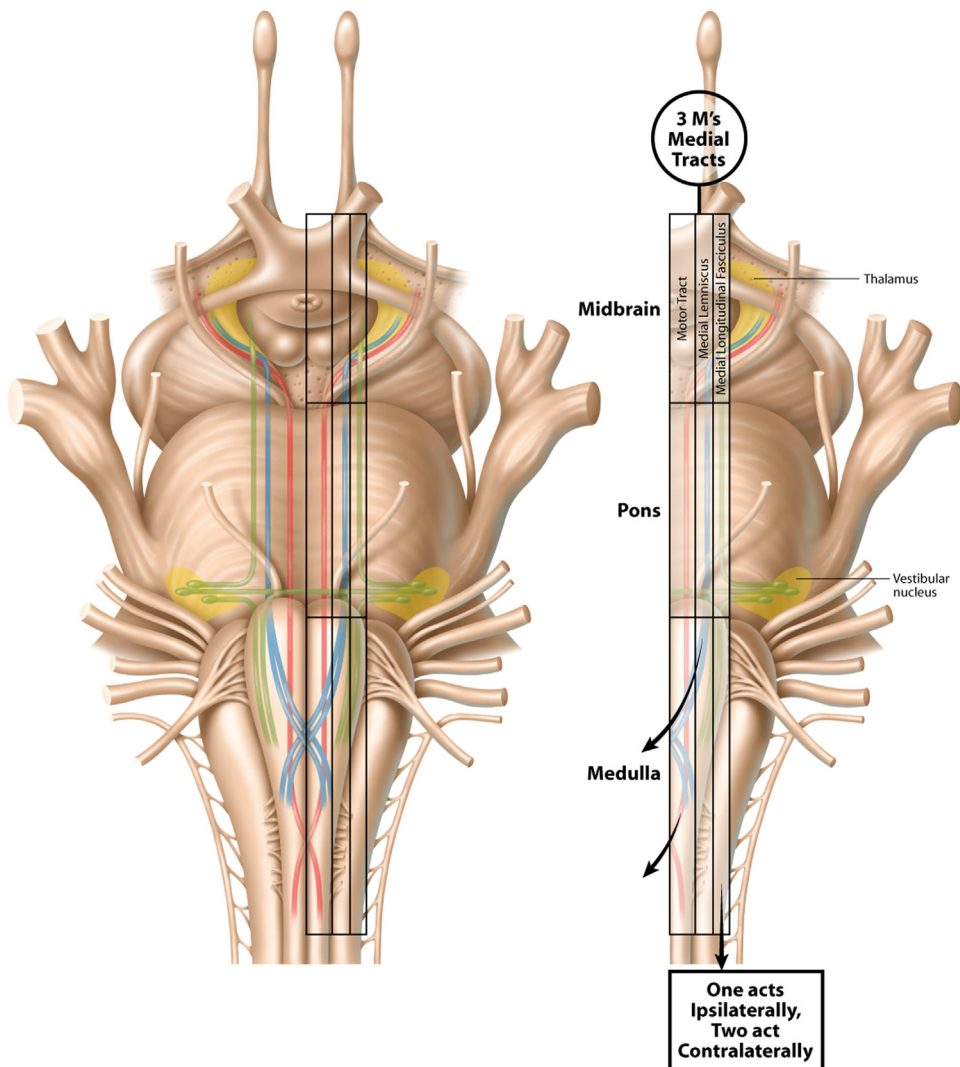


Figure 2. Rule of M/S: Medial Tracts. Application of the Rule of M/S identifies 3 medial tracts, all beginning with the letter “M”: Motor tract (ie, corticospinal tract), Medial lemniscus, and Medial longitudinal fasciculus.

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