CORRESPONDENCE

To the Editor

Re: Can J. Neurol. Sci. 2006;33:1-2 Lost Fundamentals in Neurosciences - A Call for Discussion

Discussion may be sparked by the following anecdotes.

1. While teaching small groups of medical students, I showed a slide of midbrain with absolutely no black substantia nigra visible. I asked the student to describe the slide, expecting the fact this was the midbrain, and the total absence of a pigment to be recognized. The student guessed the slide was of cerebellum!

Later, the student came to my office, rebuked me, and stated she was not intending to go into a field requiring knowledge of the substantia nigra and dopamine, offering "I'm going to go into psychiatry!" The importance of dopamine in psychiatric conditions, and addiction, escaped this self-designed learning program. Dopamine is of course fundamental to psychosis and also to the pleasure we derive from our brains. Dopamine is essential to know about in psychiatry, and over-treatment of Parkinsonism may cause psychosis via high dopamine levels.

2. At neuropathology brain cut, residents sometimes still attend, and three clinical neuroscience residents, two of whom were in their senior year, asked a question about the midbrain. The large, square, white object that is conspicuous in the lower midbrain, was unknown to the three residents. This structure was the decussation of the superior cerebellar peduncles. In spite of it being white on cross section of brain, it was called a grey matter structure in several attempts to answer my question.

When I told them this was the decussation of the superior cerebellar peduncles, it was met with obvious surprise. I asked where this structure originates and where it terminates. The knowledge that the dentate nucleus of the cerebellum projects to the thalamus, seemed abstruse as I imparted it. Lastly, it seemed too fundamental to tell residents, including senior residents, that decussation between the cerebellum and thalamus was obligatory in concept, because the cerebrum controls the contralateral body whereas the cerebellum controls the ipsilateral body.

3. While preparing for teaching on autism, I came across references to possible abnormalities in the olivo-cerebellar tract within the brain, a decrease in Purkinje cells and increased brain size at 18 months.[1,2] I thought of how abstruse the neuroanatomy of the climbing fibers from the olive to the cerebellum seems nowadays, yet how important autism seems to society, a contradiction of the times we live in. Autism is featured on bus shelters and is a significant public health problem. Nobody wants to know the neuroanatomy of the brain, while everybody wants to understand autism. For those interested in autism, I give the references. Linking disparate fields may offer a clue to this serious disorder. Neuroanatomy is important here, applied to this disease, and other serious diseases of the brain. In this way, neuroanatomy may link researchers on disease with the clinicians and parents experiencing that disease. Often, PhD's are not as cognizant of the neuroanatomy of disease as they might be.

While neuroanatomy is in decline, it may serve to bridge the ever-widening gaps that Dr. Zochodne alludes to in his editorial. These gaps between clinicians and basic scientists are becoming large and gaping in our integrative and synthetic knowledge about neuroscience problems. We need to recognize that fundamentals in neuroscience are important not only in their own right, but in understanding disease, as well as linking clinicians and researchers. For all these reasons, the trend toward lost fundamentals is to be not only lamented, but actively reversed by all of us.

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References

1. Kemper TL, Bauman ML. The contribution of neuropathological studies to the understanding of autism. Neurol Clin. 1993; 11: 175-87.
2. Kemper TL, Bauman M. Neuropathology of infantile autism. J Neuropathol Exp Neurol. 1998; 57: 645-52.

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