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Title: NEURONAL BEHAVIOURS IN PONTINE STORAGE CENTRE

Background -

Experimental and clinical studies have shown that the pontine micturition centre (PMC), which is located in or adjacent to the locus ceruleus, is critical for neural control of micturition. Recent studies suggest that the pontine storage centre (PSC), which is located just ventrolateral to the PMC, is critical in the storage of urine during continence.

Methods -

We analyzed firing patterns of 46 PSC neurons, in which electrical microstimulation induced inhibition of isovolumetric micturition reflex, in 20 male decerebrated and paralyzed cats.

Results -

There were 4 classes of firing patterns, and each firing type of neurons tended to locate in a particular site of the stereotaxic mapping: *a*) firing during urinary storage phase (*storage-related neurons*) [P0 to -4 of Horsley-clarke coordinates], and firing during voiding phase (*voiding-related neurons*) [P-2 to -3], *b*) firing during both phases but with one phase dominance (*biphase neurons*) [P-2 to -4], and firing during one phase only (*monophase neurons*) [P0 to -4], *c*) constant firing frequency (*retaining neurons*) [P0 to -4], decrementing firing frequency with its peak at the start of firing (*switching-on neurons*) [P0 to -4], and augmenting firing frequency with its peak at the end of firing (*switching-off neurons*) [P-2 to -4]. *d*) low peak firing frequency (<10 c/s) [P0 to -4], intermediate peak firing frequency (10-100 c/s) [P-1 to -4], and high peak firing frequency (>100 c/s) [P-2 to -4].

Conclusion -

The diverse firing pattern and location of the PSC neurons suggest that the neurons organize a complex neuronal circuitry which is critical in the nervous control of urinary continence.