This paper demonstrated that electrical stimulation of several brain stem sites abolished responsiveness to intense pain in rats. These results were interpreted as indicating the existence of a supraspinal endogenous pain suppression system which has an ultimate inhibitory action on pain in the spinal cord. [The SSC and the SCF indicate that this paper has been cited in more than 490 publications.]

The Opiate of the Rats

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Our involvement in this work was in many ways serendipitous. Tom L. Wolfe, doing his dissertation research in John C. Liebeskind's lab at UCLA, was examining the ability to produce pain by stimulating the periaqueductal gray matter of rats. A series of perplexing observations in his animals led me to conclude that stimulation of the periaqueductal gray matter, contrary to what the available literature stated, could be rewarding.

At this point, an incidental observation was critical for our discovery. When one of these animals pressed the bar to self-stimulate, the train of brain stimulation elicited a stereotyped movement which forced the animal's head into a piece of sharp metal in the corner of the test chamber. I noticed that the animal made no response to this obviously painful stimulation and was immediately reminded of an earlier report by D.V. Reynolds of analgesia from stimulation of this same brain region. Analgesia had been rediscovered. We then devoted considerable attention. Our work provided another line of support for one of the major contentions of the theory. Another area of related research, the pharmacology of opiate receptors and endogenous opioids, was almost simultaneously receiving renewed attention. Our work provided another line of support for the concept of an endogenous opiate analgesic system. Finally, our work had direct clinical relevance and applicability to the difficult problem of relief of intractable pain in man.


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