LETTERS TO THE EDITOR

Comments on
"Electrical Activity from the Sinus Node Region in Conscious Dogs"

The article by Hariman and coworkers, "Electrical Activity from the Sinus Node Region in Conscious Dogs," is most interesting. Several points are noteworthy:

1. The authors clearly demonstrate that significant beat-to-beat variations are associated with variations in sinoatrial intervals. In our experience, such behavior may be observed clinically by the indirect technique of atrial stimulation at constant relative prematurity (Cabanis et al., 1978). The "sinoatrial conduction time" depends on the length of the preceding sinus cycle.

2. The changes in P wave configuration observed by Hariman et al. after intra-sinusal pacemaker shift may also be observed on surface human electrograms after a change in vagal tone (Guize et al. 1979).

3. Changes in rate and sinoatrial intervals are obvious in the conscious dog but may also be assessed in anesthetized animals. We performed atrial stimulation at constant relative prematurity in the right and left atrium in thirteen dogs and found significant variations of the return cycle related to the primary location of the dominant pacemaker (Le Heuzey et al., 1981). Variations of spontaneous cycle length and, therefore, intrasinusal pacemaker shifts, were obtained by changing the volume and frequency of ventilation. Katoh (1964) and Goldberg (1975) have also reported indirect demonstrations of intrasinusal pacemaker shifts induced by sympathetic and parasympathetic stimulation in anesthetized open-chest dog.

Hariman's data provide further evidence of the inadequacy of classical methods of measuring the "sino-atrial conduction time." We think that clinical evaluation of sinus node function requires comparison between the return cycle and the preceding spontaneous cycle length because of the shifts induced by changes in autonomic tone (LeHeuzey et al., 1979).

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Reply to the Preceding Letter

Indeed, the relationship between "Sino-Atrial Conduction Time" and sinus cycle length has been examined previously (Reiffel et al., 1974; Cabanis et al., 1978). However, we would like to emphasize the completely different results reported in the previous studies (Reiffel et al., 1974; Cabanis et al., 1978) and in our studies. In the previous studies, there was an inverse relationship between sinoatrial conduction time and sinus cycle length i.e., as sinus cycle length increased, sinoatrial conduction time decreased. In our studies, we have not found such a relationship. As can be seen in Figure 4 of our article, sinoatrial intervals tend to increase when sinus cycles increases. Our finding is completely expected, since an increase in vagal tone, which is responsible for the prolongation of sinus cycle, also increases sinoatrial interval (Hariman and Hoffman, 1979). Again, this stresses the inadequacy of the classical method. Not only does the premature atrial stimulation alter the basic sinus cycle, it also causes sinus pacemaker shift and changes sinoatrial interval in the returning sinus beat (Hariman et al., 1979).

Our studies in conscious animals provide a method to evaluate the effect of spontaneous variation in vagal tone on sinus function, which is less intense in anesthetized dogs.

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