

Thus, if a single site of action is involved in the depressant action of methoxyflurane on the heart, that site would appear to be the glucose phosphate isomerase step. By a similar line of reasoning, this is also the step implicated for halothane.<sup>1, 2, 4</sup>

### References

1. Ko K-C, Paradise RR: The effects of substrates on contractility of rat atria depressed with halothane. *ANESTHESIOLOGY* 31:532-539, 1969
2. Paradise RR, Ko K-C: The effect of fructose on halothane-depressed rat atria. *ANESTHESIOLOGY* 32:124-129, 1970
3. Ko K-C, Paradise RR: The effects of substrates on rat atria depressed with bicarbonate-free medium, citrate, or low calcium. *Proc Soc Exp Biol Med* 134:469-476, 1970
4. Ko K-C, Paradise RR: Contractile depression of rat atria by halothane in the absence of glucose. *ANESTHESIOLOGY* 34:152-156, 1971
5. Evans G: The glycogen content of the rat heart. *J. Physiol* 83:468-480, 1934
6. Neely JR, Whitfield CF, Morgan HE: Regulation of glycogenolysis in hearts: Effects of pressure development, glucose, and FFA. *Amer J Physiol* 219:1083-1088, 1970
7. Ko K-C, Paradise RR: Nature of endogenous substrates used to support contractility of isolated rat atria. *Proc Soc Exp Biol Med* 137:928-931, 1971
8. Paradise RR, Griffith LK: Electrolyte content of perfused rat ventricles exposed to halothane or anoxia. *J Pharmacol Exp Ther* 154:281-288, 1966
9. Paradise RR, Griffith LK: Control of concentration of volatile agents in open *in vitro* systems. *ANESTHESIOLOGY* 27:687-688, 1966
10. Paradise RR, Bibbins F: Comparison of the effects of equieffective concentrations of anesthetics on the force of contraction of isolated perfused rat hearts: Correlation with the equieffective anesthetizing partial pressures. *ANESTHESIOLOGY* 31:349-355, 1969
11. Cherkin A, Catchpool JF: Temperature dependence of anesthesia in goldfish. *Science* 144:1460-1462, 1964
12. Larson CP, Eger EI II, Severinghaus JW: Solubility of halothane in blood and tissue homogenates. *ANESTHESIOLOGY* 23:349-355, 1962
13. Ko K-C, Paradise RR: The effects of substrates on contractility of isolated rat atria depressed by hydrochloric acid. *Proc Soc Exp Biol Med* 136:178-182, 1971

### Respiration

**FAMILIAL DYSAUTONOMIA AND RESPIRATORY CONTROL** The authors describe a detailed study of a patient with acquired dysautonomia (*i.e.*, inappropriate response of autonomic function) who had abnormal circulatory control mechanisms with orthostatic hypotension (*i.e.*, on tilting to head-up position, arterial blood pressure fell from 102/60 to 70/35 torr without a change in heart rate; there was no blood-pressure response to cold stimulation nor a post-Valsalva blood-pressure overshoot). Exposure to a mixture of 10 per cent oxygen and 90 per cent nitrogen was not associated with a change of ventilation despite a decrease in  $P_{aO_2}$  from 64 to 30 torr. This response was similar to that observed in the experimental animal with a dehydrated carotid body or in man following bilateral block of the ninth and tenth

cranial nerves. The positive interaction between elevated  $P_{CO_2}$  and lowered  $P_{O_2}$  was absent; *i.e.*, when the patient was challenged with 5 per cent  $CO_2$  in 95 per cent oxygen there was an increase in ventilation (less than in normal man) which was as large as the response to 5 per cent  $CO_2$  with 15 per cent oxygen. Administration of atropine intravenously in increments of 0.4 mg to a total dose of 2.0 mg did not increase heart rate, although a characteristic increase followed the infusion of isoproterenol. The lack of response to hypoxia demonstrates absent peripheral chemoreceptor activity, while the weak response to  $CO_2$  suggests some central chemoreceptor involvement. (Eisele, J. H., and others: *Abnormal Respiratory Control in Acquired Dysautonomia*, *New Eng. J. Med.* 285: 366, 1971.)