38) The Early Change of ECG by Gas Inhalation in Rats.
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We have observed the occurrence of bradyarrhythmia by gas inhalation in rats, which always accompanied with the early changes of ST segment or T wave. Therefore, we studied the mechanism of the early changes of ST segment or T wave during gas inhalation.

Stroke-prone spontaneously hypertensive rats (SHRSP), stroke-resistant SHR (SHRSR) and Wistar Kyoto rats (WKY) of both sexes were used, which were 4 to 16 months old. These rats were anesthetized with intravenous injections of 10% urethan solution (1 ml per 100 g body weight). The catheter for measuring blood pressure was inserted into rat right carotid artery, connecting to polygraph system (Nihon Kohden, PM-600), on which blood pressure, respiratory curve by pick up method (TR-602T) and monitor ECG were recorded simultaneously. N₂ or H₂ gases were inhaled through rat nose under the constant pressure from gas bombe. Gas inhalation was continued until the occurrence of bradyarrhythmias. The early changes of ST segment or T wave and T/R ratio on nonfilter ECG were calculated using the computer system (Sony Magnescale A-45, NEC San-ei 7T18, IBM PS/55). Through N₂ or H₂ gas inhalations for about 20 to 30 seconds in 5 SHRSP, in 5 SHRSR or 5 WKY aged 5 to 7 months, systolic blood pressure was lowered, the frequency of respiratory increased, and ST segment or T wave became higher, resulting in the higher T/R ratio on monitor ECG.

In 5 male SHRSR aged 16 months, the grades of the elevation of ST segment or T wave were decreased slightly by the intravenous administration of metoprolol (5 mg/kg) or amosulalol (0.5 mg/kg), which were injected immediately before the start of N₂ gas inhalation (Table). The participation of β -blocker in the occurrence of the elevation of ST segment or T wave was shown in this investigation.

Drug	R/T ratio before	R/T ratio after
-	0.165±0.056 (5)	0.300±0.125 (5)
Metoprolol	0.149±0.047 (5)	0.228±0.072 (5)
Amosulalol	0.144±0.064 (5)	0.191±0.066 (5)

M±SD ():case number