

SUMMARY (Anesthesia techniques and organ microcirculation)

There is an increasing evidence about microcirculatory effects of different intravenous anesthetics both under physiological and specific pathological conditions. This study aimed to investigate the effects of intravenous anesthetics on hepatosplanchnic microcirculation in laparotomized mechanically ventilated rats using Sidestream Dark-field (SDF) imaging. Thirty male Wistar rats were divided into 5 groups ($n = 6$ each). All rats were initially anesthetized with 60mg/kg pentobarbital (i.p.) for instrumentation. This was followed by either ketamine, propofol, thiopental, midazolam or saline + fentanyl (iv bolus over 5 min. and then maintenance over 90 min.). SDF imaging of the liver and distal ileum microcirculation was performed at the baseline and at $t = 5, 35, 65$ and 95 min. In propofol group there was increase of functional sinusoidal density (FSD) following induction (+25%, $P < 0.05$) and maintenance at $t = 95$ min. (+10.3%, $P < 0.05$), in ketamine and midazolam group decrease of FSD was observed after induction (-20.4%, $P < 0.05$; -10.1%, $P < 0.05$) and during maintenance at $t = 65$ min. (-11.6%, $P < 0.05$; -11.4%, $P < 0.05$) when compared to baseline. Following induction with propofol functional capillary density (FCD) of ileal longitudinal muscle layer increased (+10.6%, $P < 0.05$) and returned to baseline values during maintenance. Ketamine and midazolam decreased FCD of longitudinal layer after induction (-24.6%, $P < 0.05$; -21.1%, $P < 0.05$) and remained decreased during maintenance at $t = 95$ min. (-10.8%, $P < 0.05$; -15.5%, $P < 0.05$). In thiopental and control group, changes in microcirculatory parameters were not significant throughout the study. In conclusion, intravenous anesthetics affect the hepatosplanchnic microcirculation differentially, propofol has shown protective effect on the liver and intestinal microcirculation.

Key words: Intravenous anesthetics; hepatosplanchnic microcirculation; SDF imaging