Anatomical review of His-Purkinje system in goat hearts

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Tawara의 ungulate heart Purkinje network

4. 부정맥의 치료
수술사망의 주요원인은 부정맥으로 항부정맥약제 사용이 중요하다. Markovitz 등은 bretylium (5mg/kg) 및 lidocaine (75mg) 정주한 후 lidocaine을 분당 1~2mg 연속 정주 하는 방법을 사용하였으며 Millner 등은 심낭 절개 직후 lidocaine 100mg 정주 후 20분 후 추가로 50mg 정주 하는 방법으로 안정적으로 실험할 수 있다고 하였다. 본 연구에서는 homonymous coronary artery 결찰 전에 lidocaine (2mg/kg)을 일차로 정주하고 homonymous coronary artery 결찰 후 15분에 1 mg/kg를 추가로 정주하고 diagonal branch 결찰 전후에도 같은 방법으로 lidocaine을 정주 하였다.
Goat Purkinje system, macroscopic distribution
Goat Purkinje system, Subendocardial fibers
Goat Purkinje system, intramyocardial fibers
Goat Purkinje system, Myocardial infarct
Goat intra-myocardial coronary arteries,
Normal and myocardial infarct
• The atrioventricular node
  – have similar cellular character to that of human
  – more interstitial connective tissue
• The His bundle and the proximal left bundle
  – covered by the myocardium such that the membranous septum is not formed.
  – Potential source of the so-called “left ventricular summit”
• The Purkinje system
  – the abundant cytoplasmic glycogen, fewer myofibrils located in the cell periphery in a disorganized manner.
  – The distal Purkinje cells become similar to the ventricular myocardial cells so that cytoplasm became long and slender.
  – The nucleus of the Purkinje cells are larger and sometimes binucleated.
• Side-to-side cell junctions and branching of Purkinje cells are frequent and the anastomosing network are mostly at the sub-endocardium.
  – Endocardial mapping of the Purkinje system will show some more.