Histological Comparison Study with Primo Node and Immature Liver Tissue on Liver Surface in Rat

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결과는
결론

Abstract

목적 : 프리모 모드와 미성숙 간조직에 대한 조직학적 특성을 비교하고자 하였다.
방법 : 원추의 간 포경에서 관찰되는 프리모 노드와 그와 유사한 미성숙 간조직을 H&E, Oil red O, Masson trichrome and van Gieson 염색법을 통해서 비교 연구하였다.
결과 : 상기 실험 연구를 진행한 결과, 다음과 같은 결론을 얻었다.
1. 조직의 일반적인 특징을 관찰한 수의 H&E 염색결과, 프리모 노드에서는 많은 수의 표그라한 다중(sinus)이 관찰되었고 적혈구나 영양을 공급하는 혈관의 편포는 관찰되지 않았다. 이와 반대로 미성숙 간조직에서는 동
이 관찰되지 않았으며 혈관의 편포와 적혈구가 관찰되었다.
2. 양 조직의 지방성분의 유무를 관찰하기 위한 Oil red O 염색결과, 프리모 노드에서는 지방성분이 관찰되지 않았으나 미성숙 간조직에서는 관찰되었다.
3. 양 조직의 콜라겐성분의 유무를 관찰하기 위한 Masson trichrome and van Gieson 염색결과, 프리모 노드에서
는 얇건의 콜라겐 성분이 관찰되었으나 elastic 성분은 관찰되지 않았으며, 미성숙 간조직에서는 콜라겐 성분
과 elastic 성분이 관찰되지 않았다.
결론 : 상기 결과는 프리모 노드의 다른 조직학적 성질이 다른 것으로 사료되며, 특히 콜라겐 성분의 적은
결과는 프리모 노드가 불규칙한 형태를 이루고 있는 이유에 대한 설명이 제공하였다. 이러한 결과는 프리모 노
드의 특성에 대한 기본 자료로 활용될 수 있을 것이다.

Key words : Primo node, immature liver tissue, Oil red O stain, Masson trichrom stain, van Gieson stain

1. Introduction

The first introduction of Bong-Han theory of prime vascular system different from the vascular.
nervous, and lymphatic systems was announced by Bong-Han Kim in the early of 1960’s. Kim claimed that the primo vascular systems (PVS) consisting of the primo nodes (Bonghan corpuscles) and prime vessels (Bonghan ducts) were anatomical basic structures of traditional acupuncture systems (named Kyungrok theory or meridians). Because Kim found the primo nodes and vessels in where were being put on the acupoints lower part in the skin.

And Bong-Han Kim classified PVS to superficial primo nodes and vessels, organ-surface primo nodes and vessels, intravascular primo nodes and vessels, nervous primo nodes and vessels. However, Kim’s reports have been neglected for the past 40 years because of the difficulties of reproducing his results.

In last several years, Bong-Han theory has been revived through the research to find the anatomical structure by Soh and his members of Biomedical Physics Laboratory of Seoul National University (SNU) using the staining with Janus Green B, Alcian blue, Acridine Orange, Trypan blue, and nanoparticles.

In our previous studies on PVS, there were the results in about the morphology studies of organ-surface primo nodes and vessels and distinguish point internal PVS from torn mesentery tissue. In this study, we found the primo nodes on liver surface after hepatectomy surgical procedure and distinguished it from the immature liver tissue for comparison study in rat. The present report will be useful to know the characteristic feature of primo node.

II. Materials and Method

1. Animals

Sprague Dawley rats weighting about 250-300 g (5-6 weeks) used in this study were obtained from Samtaco Laboratory Animal Company (Osan, Korea). The animals were housed in a temperature-controlled environment (23°C) with 60% relative humidity, a 12-h light/dark cycle, and ad-libitum access to food and water. All the procedures involving the animals and their care conformed to institutional guidelines, which were in full compliance with current international laws and polices (Guide for the Care and Use of Laboratory Animals, National Academy Press, 1996). And the study was approved by the Institute of Laboratory Animal Resources in Wonkwang University.

2. Surgical procedures

The rats injected with urethane (1.5 g/kg), i.m. before the surgical operation. All surgical procedures were performed under general anesthesia. We incised the skin along the medial alba of the abdomen very carefully and opened the abdomen. Suprarehepatic vena cava were clipped with forceps before hepatectomy. The liver Isolated from abdominal cavity were moved to PBS (pH 7.2) pool rapidly and washed out for 3-5 times vary carefully. We searched for primo-nodes on the liver lobe surfaces carefully by using small surgical instruments such as iris scissors, microforceps, and needles for manipulation. The search for the nodes and the vessels was carried out under a stereoscopic microscope (SZX10, Olympus, Japan).

3. Tissue preparation and staining

The samples were isolated washed in PBS slowly and gently and directly fixed in 10% neutral-buffered formalin (NBF) at 4°C overnight. And fixed samples were embedded in paraffin, sliced