

## 14. 폐관류-폐연무흡입 신티그라피의 임상상에 관한 분석

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폐관류 신티그라피는 폐동맥 혈류의 분포상황을 알 수 있으며 폐동맥 폐쇄시는 그 부위에 냉소로 나타나는 것이다. 폐동맥 색전증의 진단에 있어서 폐환기 신티그라피의 이용이 불가능한 경우 연무흡입 신티그라피를 이용할 수 있다. 이것은 연무흡입시 0.1~0.2 um의 입자가 폐포에가서 상피표면에 침착되어 폐영상을 이루게 되는 것으로 폐의 환기상태를 검사하는데 있어 경제적이며 간단한 방법으로써 환기신티그라피의 이용이 어려운 경우에 많이 이용되고 있으며 폐관류-폐연무흡입 신티그라피를 실시하여 폐색전증의 진단에 있어 민감도와 특이도를 높이는데 도움이 된다.

연자들은 폐색전증을 의심하여 폐관류검사와 폐연무흡입 검사를 시행받은 56명의 환자에서 신티그라피의 소견을 분석하여 다음과 같은 소견을 얻었다.

1) High probable pulmonary embolism(이하 PE로 표시)으로 판독된 경우가 16명(29%), Low probable PE로 나타난 경우가 29명(52%), Intermediate probable PE가 5명(9%) 그리고 정상으로 나타난 경우가 6명(11%)이었다.

2) High probable PE중 기저 질환으로써 심부정맥 혈전증이 6예(37%)로 가장 많았고, 심장질환 5예(31%), 암 2예(12.5%), Behcet's 질환 2예(12.5%) 그리고 급성신부전증 1예(6%)였다.

3) PE가 가장 많이 발생한 분절은 좌측하폐엽의 basal segment 9예(56%)를 차지하였고, 좌측상폐엽의 apical segment 4예(25%), 우측하폐엽의 basal segment 9예(56%), 우측상폐엽의 posterior segment 3예(18%), 우측상폐엽의 anterior segment 3예(18%)순이었다.

4) High probable PE을 보인 환자중 흉부 X-ray상 소견은 정상이 9예(56%), 폐침윤이 4예(25%), 폐결핵이 2예(13%), 늑막질환이 1예(6%)였다.

이상의 결과로 보아 폐동맥색전증의 진단에 있어 폐관류 검사와 같이 폐연무흡입 검사를 동시에 시행하여 폐동맥 색전증의 진단율을 높일 수 있을 것으로 생각된다.

## 15. An Analysis of the Clinical Features and Nuclear Medicine Studies of Deep Vein Thrombosis and Pulmonary Embolism

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Pulmonary embolism is a disease caused by occlusion of the pulmonary vascular bed, usually by a dislodged thrombus from the deep venous system of the lower extremities. Although it's prompt recognition and management is important due to its potential for significant sequelae, there lie many difficulties in its diagnosis. The low reliability of clinical symptoms and the invasiveness of definite diagnostic modalities such as contrast angiography presents further problems, and radionuclide studies are considered an useful method.

In an attempt to better understand the clinical features of pulmonary embolism and to reevaluate the diagnostic value of radionuclide studies in this disease entity, we reviewed the clinical features, radionuclide venographies and perfusion scans of 71 patients diagnosed as having deep vein thrombosis (DVT). The results showed:

1) The DVTs were most common in the lower extremities (67%), with a greater preponderance on the left side (77% vs 23%).

2) Of the DVT patients, 40% showed lung perfusion scans that were considered as having a high probability of pulmonary embolism (HPPE).

3) DVTs involving the iliofemoral veins were more likely to present HPPE lung perfusion scans compared to those confined to the calf.

4) Of the patients presenting HPPE scans, 70% showed no chest symptoms.

Thus, the high incidence of highly suspected PE in DVT patients, and the low incidence of specific

symptoms suggest that a screening method as well as a high level of suspicion for PE is important. And combined radionuclide venography and lung perfusion scan seems a reasonable approach for patients suspected of DVT in order to evaluate the possibility of pulmonary embolism.

## 16. Scintigraphic Measurement of the Changes of Pulmonary Vasculature in Korean Hemorrhagic Fever

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Pulmonary vascularity and vascular permeability have been thought to vary according to the disease course of Korean hemorrhagic fever (KHF), and the extreme change of these variables might lead to the fatal outcome among the most severely ill patients. We adopted radiolabelled albumin cinescintigraphy which had been applied for the the evaluation of the adult respiratory distress syndrome with permeability edema, and tried to assess the changes of pulmonary vasculature in KHF.

In 10 patients, sequentially in 7 patients, we performed lung and heart cinescintigraphy with  $^{99m}\text{Tc}$  albumin and acquired the curves of density ratios for the selected regions of interests; heart, lungs and liver. We took the density ratio of lung-to-heart and that of liver-to-heart at 20 minutes after the albumin injection for an index reflecting pulmonary and hepatic blood volumes respectively. We considered the density ratio changes (represented by the slopes of the curves) of the lungs and the liver between 20 and 50 minutes as another index reflecting vascular permeability.

Density ratios of lung-to-heart and liver-to-heart taken during late phases of Korean hemorrhagic fever tended to aggregate near the value of 0.5 and 0.7 respectively. Density ratios of lung-to-heart ran-

ged between 0.37 and 2.0 and these ratios increased to 2.0 from just after the hypotensive phase till late oliguric phase and then tended to decrease. Density ratios of the liver-to-heart ranged between 0.54 and 2.3 and showed the same pattern of changes as that of the lungs.

The slopes of the lungs representing the tidal changes of the density ratios ranged between  $2.9 \times 10^{-2}$  and  $-3.99 \times 10^{-2}$ . The curves of lung-to-heart in the initial phases of KHF showed positive deflection during and even after the hypotensive phase. 4 among 23 images showed these findings. During the oliguric period after hypotensive phase, the curves showed negative deflection, which at last recovered their flatness at the later period. Beginning to come to zero just after the hypotensive phase in a few cases, the slopes were nearly null in most cases late at diuretic phase. The slopes of liver-to-heart ranged between  $3.3 \times 10^{-2}$  and  $-5.3 \times 10^{-2}$ . The general tendency of the changes was the same as those of the lungs, but the amplitude of the variations seemed larger.

We could find that radiolabelled albumin cinescintigraphy reflected the variably changing features of pulmonary vasculature. It was concluded that pulmonary vascular permeability was increased at the early phases in some patients with KHF and the pulmonary blood volume was increased at the later period before normalization.

## 17. 심근경색증에서 $^{99m}\text{Tc}$ - MIBI 심장 스캔의 임상적 평가

서울의대 내과

김명아 · 고은미 · 손대원 · 오병희  
이명철 · 박영배 · 최윤식  
서정돈 · 이영우 · 고창순

Technetium-99m Methoxy Isobutyl Isonitrile ( $^{99m}\text{Tc}$ -MIBI)는 심근의 관류 스캔을 할 수 있는 새로운 방사성 의약품으로 배후 방사능 및 연조직에서의 광량자 흡수가 낮아 보다 좋은 영상을 얻을 수 있다. 저자들은 관동맥 질환에  $^{99m}\text{Tc}$  MIBI의 사용 가능성을 평가하