stage of the disease, and so has value for estimation of progression and prognosis of the disease. Serial follow up scintigrams of post-operative cases such as intertrochanteric osteotomies have special value to determine prognosis and assessment after surgical procedures. By scintigram for osteomyelitis, one can also obtain useful information especially for follow up study during healing process.

There has no characteristic findings on Legg-Perthes disease.

In osteonecrosis of femoral heads, specific findings are observed in all cases accordingly by stages of the disease. Especially in early stage, the diagnostic value of scintiscan is significantly high, thus it can provide quite useful information in qualitative and differential diagnosis.

Diagnosis of the Ischemia in the Femoral Head Using Catheter
Semiconductor Radiation Detector
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The clinical diagnosis of avascularity of the femoral head is routinely made by roentgenographic examination, especially by intraosseous phlebography which is concerned primarily with venous drainage. It has been thought if measuring arterial blood flow in the femoral head is routinely possible that it must be valuable for clinical evaluation diagnostically and prognostically.

The radioisotope used in those studies was DF32P which was blood seeking pure beta emitter. In order to detect the radioactivity in the femoral head in vivo, a catheter semiconductor radiation detector which is sensitive to beta radiation and small enough was inserted into the femoral head. Approximately five minutes before the counts were taken, five microcuries of DF32P per kilogram of body weight was intravenously injected, then the counts were recorded at the head, the neck and the trochanter.

Results were as follows;
1) The counting rates recorded at the femoral heads of normal dogs were directly proportional to the blood flow rates in the abdominal aorta.
2) The counting rates recorded at the femoral heads of human normal controls increased rapidly for first few minutes, and a plateau was reached in five minutes or so.

The counting rates recorded at the each portion of any normal control were almost equal. The head-to-trochanter ratios were approximately 1.0 in the four cases.
3) In the ten hips of the nine patients with idiopathic avascular necrosis, the head-to-trochanter ratios of counts per minutes were correlative to pathological changes in the portions, i.e., the ratios of 0.15 to 0 were obtained in the portions where roentgenographically radiodense, pathologically necrotic or sclerotic, while 0.56 to 1.20 were obtained in the portions radiolucent and vascular-fibrous.

In the case of three months after spongoplasty, the head-to-trochanter ratio of 0.10 increased to 0.98, that suggested the blood supply of the femoral head was relatively increased by bone grafting.
4) In the six hips of the six patients with fracture of the femoral neck (non-union), the head-to-trochanter ratios of 0.26 to 0 were correlative to pathological changes such as bone necrosis, sclerosis, and marrow fibrosis.

5) In the eighteen hips of the seventeen patients with osteoarthritis, the head-to-trochanter ratios of 1.02 to 0.08 were correlative to degenerative process of the disease, that suggested the arterial blood flow was decreased as the process worsened.

In the case of two months after intertrochanteric osteotomy, the head-to-trochanter ratio of 0.08 increased to 0.90, that suggested the arterial blood flow was increased by osteotomy.

It was concluded that this method was available estimate the arterial blood flow in the femoral head which decreased or increased totally and partially; and so was found the diagnostic and prognostic values.