

什麼是同位素掃描

同位素掃描是放射診斷專科的分支，且兼具治療的效用。藉著透視人體內部器官的新陳代謝活動，便能有效地偵測冠心病、早期腫瘤擴散和器官的生理病變。



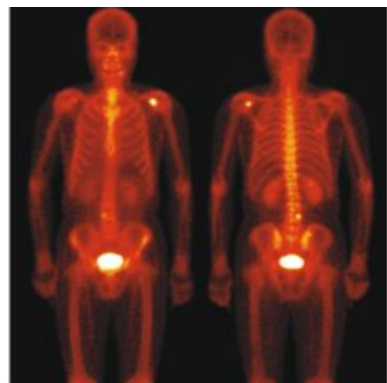
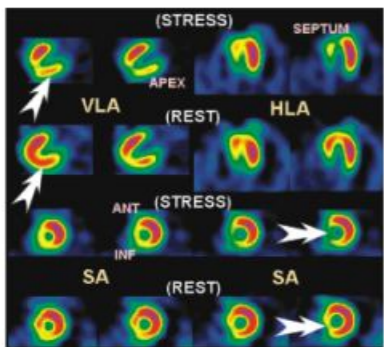
同位素掃描一般包括靜脈注射藥物和掃描兩部份。這藥物稱為同位素追蹤劑，是由放射性同位素和追蹤劑合成。這個稱為“神奇子彈”的化合物會因應不同追蹤劑的結構而自動找尋到特定的目標器官，例如：心臟血液供應量掃描用的“神奇子彈”會自動追尋到心臟；骨掃描用的“神奇子彈”會自動找尋到骨骼系統。透過一個高度敏感的掃描器，同位素發出的微量伽瑪射線會被轉化為影像，以顯示病變的所在。

此項先進的診斷檢驗已在世界各地被廣泛採用。

心臟血液供應量掃描

心臟血液供應量掃描不但能有效地探測冠心病，並可準確指示病況的輕重程度。

冠狀動脈供應心臟所必需的氧氣和養份。如果這些動脈部份堵塞或者由於膽固醇、脂肪的積聚而變得狹窄，心臟功能就會因為血液供應量不足而受損。這種症狀稱為冠狀動脈粥樣硬化，即一般所稱的冠心病。患者輕則可以導致心絞痛、頭暈、氣喘等症狀，重則會有生命危險。因此，早期的發



骨掃描

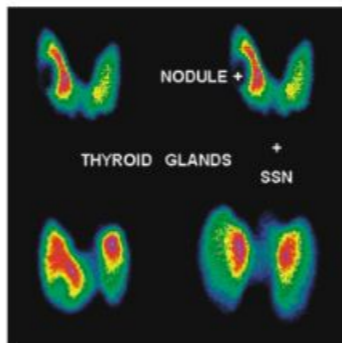
骨掃描對腫瘤細胞的擴散極為敏感，能夠準確偵測到骨骼極細微的病變。

人體骨骼的新陳代謝需要磷質。當腫瘤細胞蔓延到骨骼，會破壞

骨骼的正常組織〔即被癌細胞侵蝕〕。人體骨骼會盡力修補被破壞的地方，因此對磷質的需求也增加。不同的癌細胞對骨骼的侵蝕速度不同。骨掃描能夠偵察到骨骼新陳代謝極細微的變化，因此能探測到早期癌細胞的侵蝕。早期的發現對控制腫瘤細胞的蔓延非常重要。

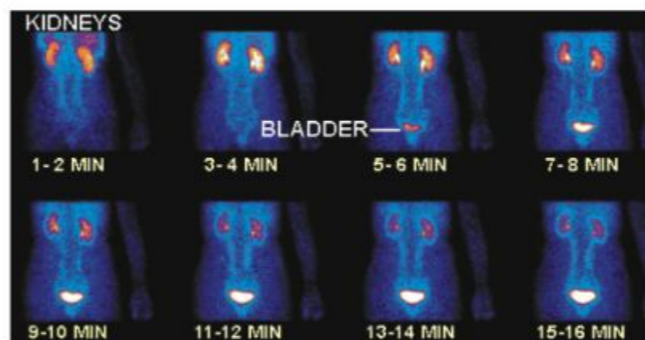
甲狀腺掃描和放射治療

甲狀腺製造調節人體新陳代謝的甲狀腺素以及兒童發育必需的生長激素。所以，甲狀腺的病變直接影響人體的健康，兒童的智力發展和身體發育。當甲狀腺功能亢進，病者會有心跳加速、流汗、怕熱、過敏、胃口增加但體重下降的病癥。甲狀腺掃描能準確、有效地檢查出病因，以及甲狀腺腫塊的存在。碘-131 兼具診斷和治療甲狀腺功能亢進的效用。



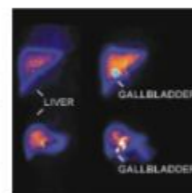
腎掃描

腎臟是調節人體水份和電解質平衡、過濾和排泄有害物質的重要器官。腎掃描能快速準確地檢查腎功能，也是探測因腎動脈狹窄而導致高血壓的有效方法。

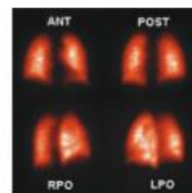


其他系統的同位素掃描

- 肝臟膽管系統掃描 (Hepatobiliary)
- 肺掃描 (Lung Ventilation & Perfusion)
- 胃-腸道出血掃描 (Gastrointestinal Bleeding)
- 前哨淋巴掃描 (Sentinel Node Mapping)
- 卵黃管掃描 (Meckel's Diverticulum)
- 腎臟皮層掃描 (Renal Cortex DMSA)
- 病菌感染掃描 (Infection e.g. Leucocyte)
- 心臟功能掃描 (Cardiac Wall Motion & EF)
- 腦掃描 (e.g. Brain Perfusion, CSF Leakage)
- 胃掃描 (Gastric Emptying)
- 驗測胃-食道倒流 (Gastroesophageal Reflux)



肝膽管系統

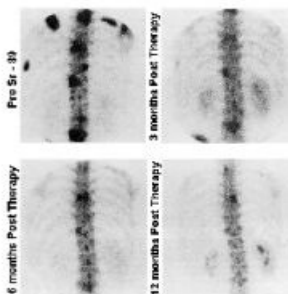


肺

同位素治療

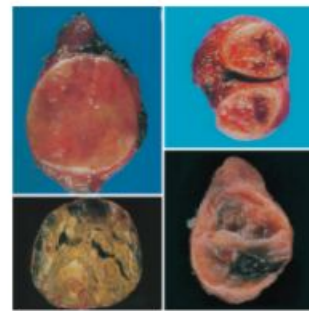
Sr-89 骨腫瘤治療

Sr - 89 治療特別針對在骨骼組織中的癌細胞，包括已知和未知的部位。這種藥物不單可以解除或減輕癌細胞入侵骨骼所造成的痛楚，而且能夠遏止癌細胞侵蝕正常骨骼的進度。在已接受過治療的病人中，超過八成感受到不同程度的止痛功效。其中大部份感到痛楚明顯減輕，甚至完全沒有骨痛。這種腫瘤治療對人體的副作用極少。



甲狀腺癌治療

在三份之一的甲狀腺腫瘤患者中，會有多於一處的腫瘤組織。當患者接受甲狀腺切除手術後，少量剩餘的甲狀腺組織可能會含有腫瘤細胞。病人應該服食放射性碘-131 將之徹底清除。這樣可以大大減低將來復發的機會和擴散的可能性。



養和醫院是目前香港唯一的私立醫院擁有這方面的全套設備，向病人提供碘-131 甲狀腺癌治療服務。

如果你對同位素掃描有任何問題，或者想知道更多資料，以及預約掃描和治療；歡迎你與我們聯絡：

同位素掃描部

香港跑馬地山村道二號
養和醫院李樹培院二樓

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What is Nuclear Medicine?



Nuclear Medicine is a branch of radiodiagnosis with extension into some aspects of radiation therapy. The main difference between nuclear medicine and conventional radiology is that nuclear medicine detects functional or physiological organ impairment, in

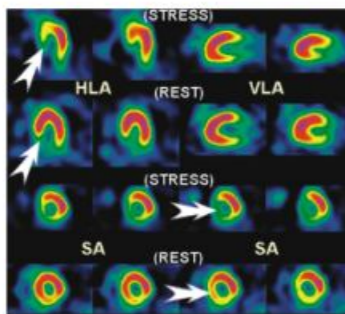
complement to the detection of structural abnormalities by plain film radiography, sonography, computed tomography (CT), and magnetic resonance (MR) imaging.

In a typical nuclear medicine imaging examination, a specific medication is injected intravenously. The medication is called a radiopharmaceutical because it is composed of a radioactive isotope and a pharmaceutical which has a specific property that selectively goes to the target organ of interest. The radioisotope emits an electromagnetic wave (we call it gamma ray) that can be monitored using a suitable detector (therefore we call this detector a gamma camera).

Myocardial Perfusion (Blood flow of the heart) Scintigraphy

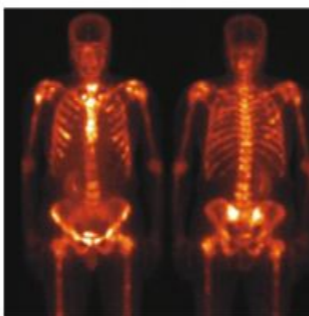
The heart receives life-giving blood from vessels called coronary arteries. If these arteries become partially blocked or narrowed by the accumulation of plaque, the heart may not receive the amount of blood necessary for proper function. This narrowing of coronary arteries is often caused by atherosclerosis, one of the causes of a disease entity we called coronary artery disease (CAD).

As CAD progresses, the heart muscle may not receive sufficient blood particularly under stress. This results in chest pain called angina. On the other hand, there may not be any outward physical signs of the disease. Myocardial Perfusion Scintigraphy is a well-known non-invasive means to detect the presence of CAD as well as to assess the severity of CAD in relation to function.



Bone Scintigraphy

The human skeleton needs phosphate as a substrate in metabolism. An area in the skeleton that works harder (with a higher metabolic activity) requires more phosphate. For example, when a tumor spreads to bone, the tumor cells disrupts the normal bone matrix organization ("eats" away normal bone). The human skeleton then reacts by trying to repair the damage. This repair needs more phosphate than normal bone metabolism.

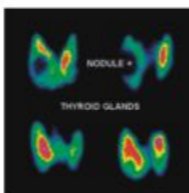


Different tumor cells can cause different rates of bone invasion and skeletal repair is likewise different. Even small repair can be detected and this is why bone scintigraphy can be very sensitive in the detection of early tumor invasion to bone before an apparent structural damage is seen on plain film radiographs.

Thyroid Scintigraphy and treatment for thyrotoxicosis

The human thyroid gland needs iodine to make the thyroid hormone, which basically regulates the metabolic activities of the entire human body. When the gland is overactive, the patient may have heat intolerance, increased irritability, sweating, bowel movements, weight loss and increased awareness of heart beats.

We can use iodine-131 for both diagnostic and therapeutical purposes. When there are lumps in the gland, it is sometimes useful to check if these lumps are overactive or underactive. This examination is also useful to differentiate between a diffusely overactive gland and a gland with diffuse inflammation.



Renal (Kidney) Scintigraphy

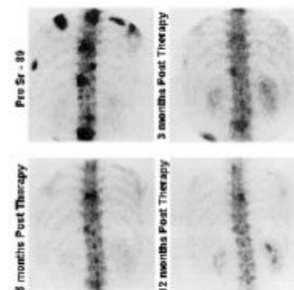


This examination uses radiopharmaceuticals that are freely filtered or excreted by the kidneys. In this way we can assess the filtering function,

drainage function, as well as blood flow and gross morphology of the kidneys. This test is also very useful in the evaluation whether the kidney arteries are the cause of high blood pressure in some patients.

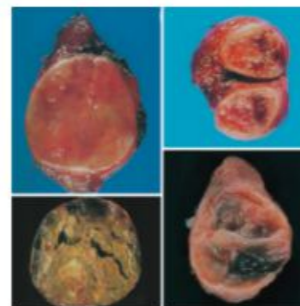
Radionuclide Therapy Strontium - 89 Therapy for Bone Metastases

The Therapy specifically targets sites of metastatic disease in bone, known and unknown, simultaneously. Strontium - 89 relieves pain associated with bone metastases and acts as an effective adjunct therapy to arrest metastatic bone disease progression. In documented reports, more than 80% of patients experienced pain relief, and a majority had marked decrease in bone pain or completely pain free.



Thyroid Cancer Treatment

Thyroid cancer may be multifocal, microscopically or macroscopically, in about 1/3 of the cases. After thyroidectomy, residual thyroid tissue or probable metastases, should be treated with radioactive I-131 ablation. This may subsequently lower the tumor recurrence rate as well as later metastases. HK Sanatorium & Hospital is the only private hospital in Hong Kong incorporating a unique facility for thyroid cancer treatments.



If you would like to have more information about nuclear medicine, schedule your patients or yourself for a service; please give us a call at:

Division of Nuclear Medicine

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Tel : 2835 8989 Fax : 2835 8825
<http://www.hksh.com>

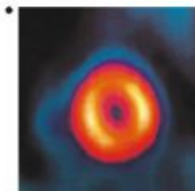
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同位素掃描 診斷與治療

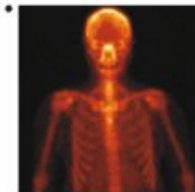
Nuclear Medicine Diagnosis & Therapy

你想知道...
You may be wondering...

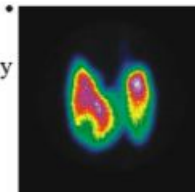
心臟健康嗎?
whether you have a healthy heart



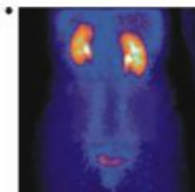
腫瘤細胞有蔓延到骨嗎?
whether your cancer has spread to bone



甲狀腺功能正常嗎?
whether your thyroid is functioning properly



腎功能正常嗎?
whether your kidney functions are normal



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