

Skeleton

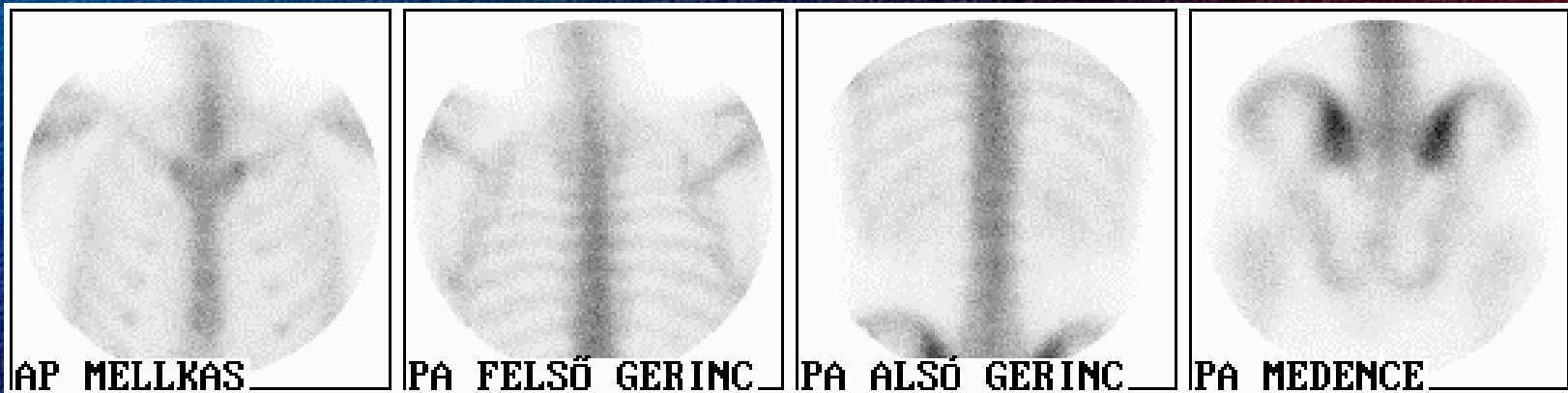
Diagnosis
Therapy

Bone scintigraphy I.

- Bone tissue has high affinity for the intravenously injected phosphate agents. The effectivity of the incorporation depends on the blood supply and on the calcium and phosphorus metabolism of the bone.
- The method is very sensitive, which becomes positive in the earliest stage of the bone disorders. The increased bone metabolism already can be shown 6 months earlier than the changing of bone structure in the X-ray.

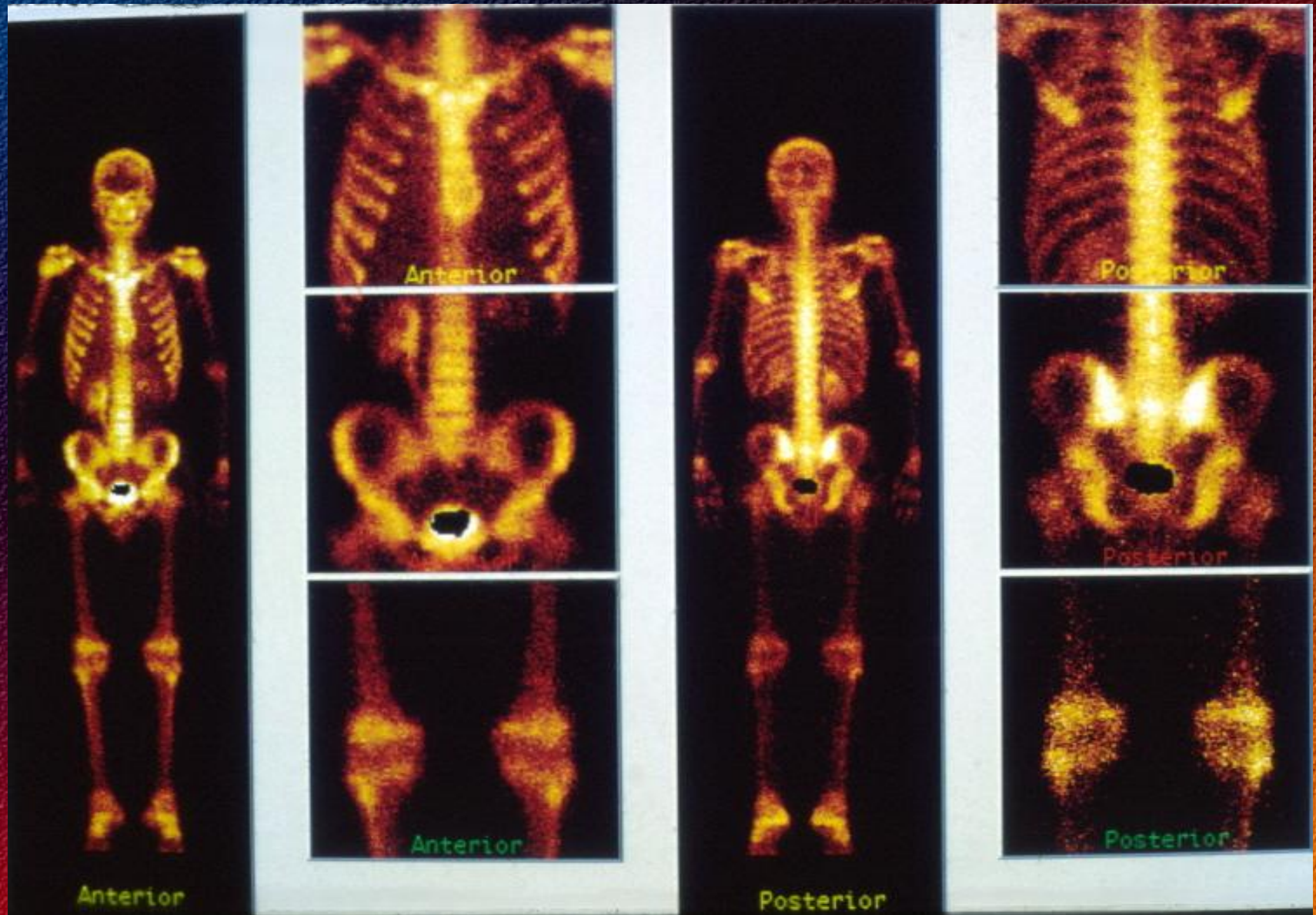
Bone scintigraphy II.

- Injected subject: **740 MBq ^{99m}Tc -phosphate (MDP, EDP, Pyrophosphate) intravenously**
- The study can be started after 2-3 hours
- Important: **rich fluid input!** (the patient should be well hydrated in order to reduce radiation burden and background activity)



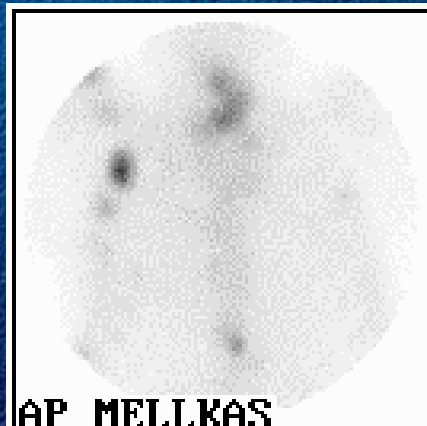
Normal bone scan

Normal whole-body bone scan

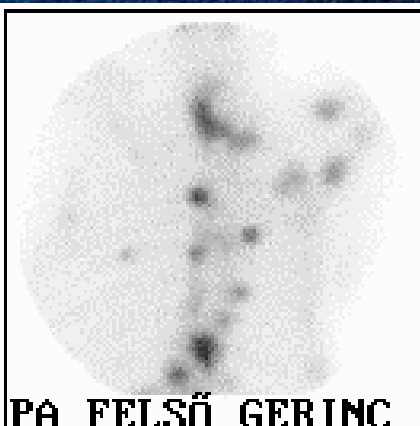


Indication of the bone scintigraphy

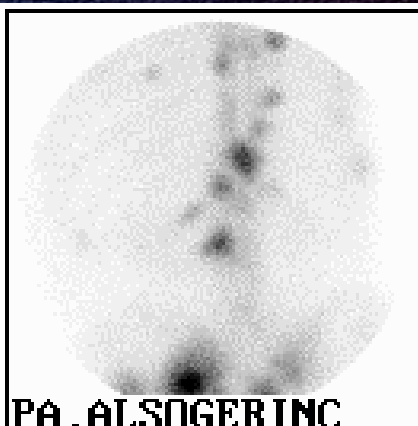
- **Metastases of the bone (mamma cc., prostatic cc, lung cc. and so on)**
- **Primary bone tumours**
- **Osteomyelitis, other inflammatory diseases**
- **Fractures (pathologic and stress fracture, occult fractures)**
- **Metabolic bone disease (hyperparathyroidism)**
- **Osteonecrosis (e.g. M. Perthes)**



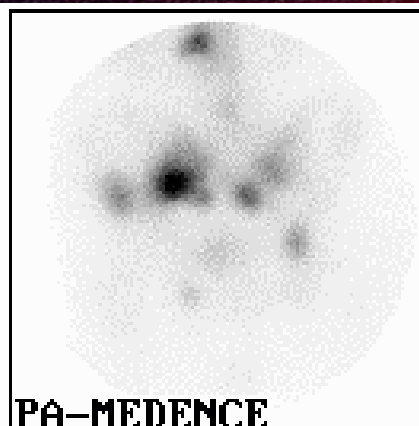
AP MELLKAS



PA FELSŐ GERINC



PA ALSÓ GERINC

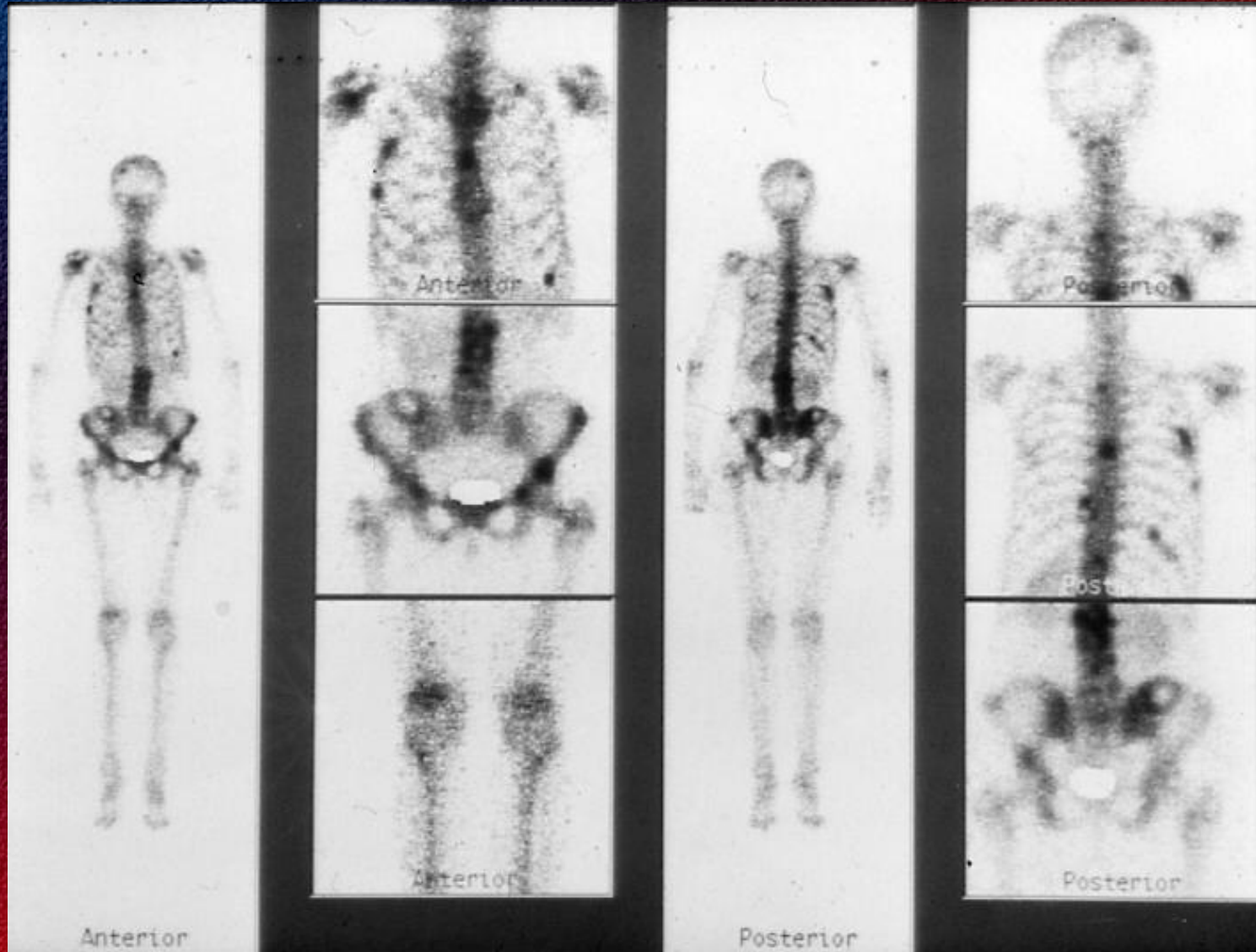


PA-MEDENCE

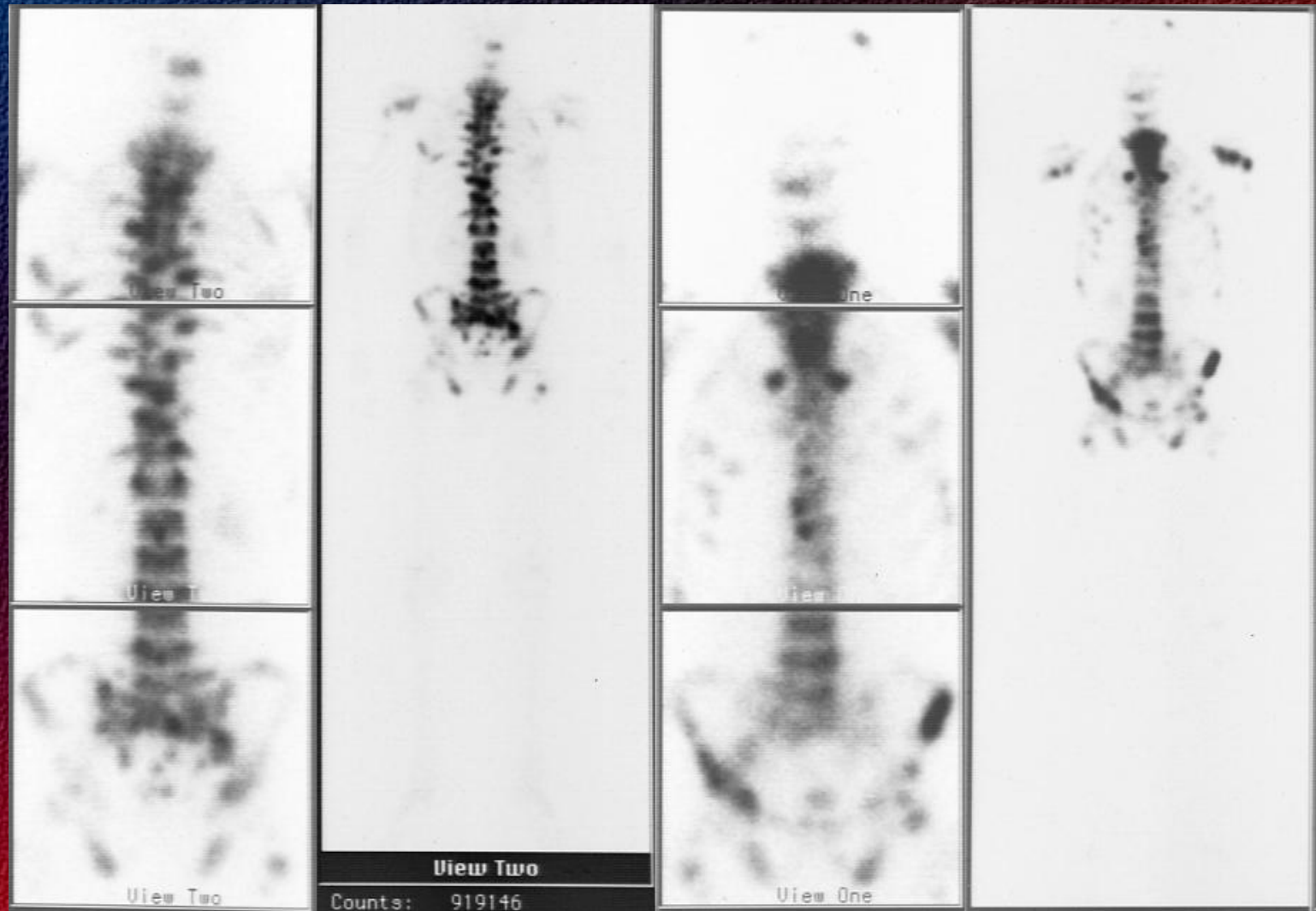
Bone metastases

Multifocal hot-spots (prostatic cc.)

Multifocal hot-spots on the whole-body bone scan (breast cancer.)



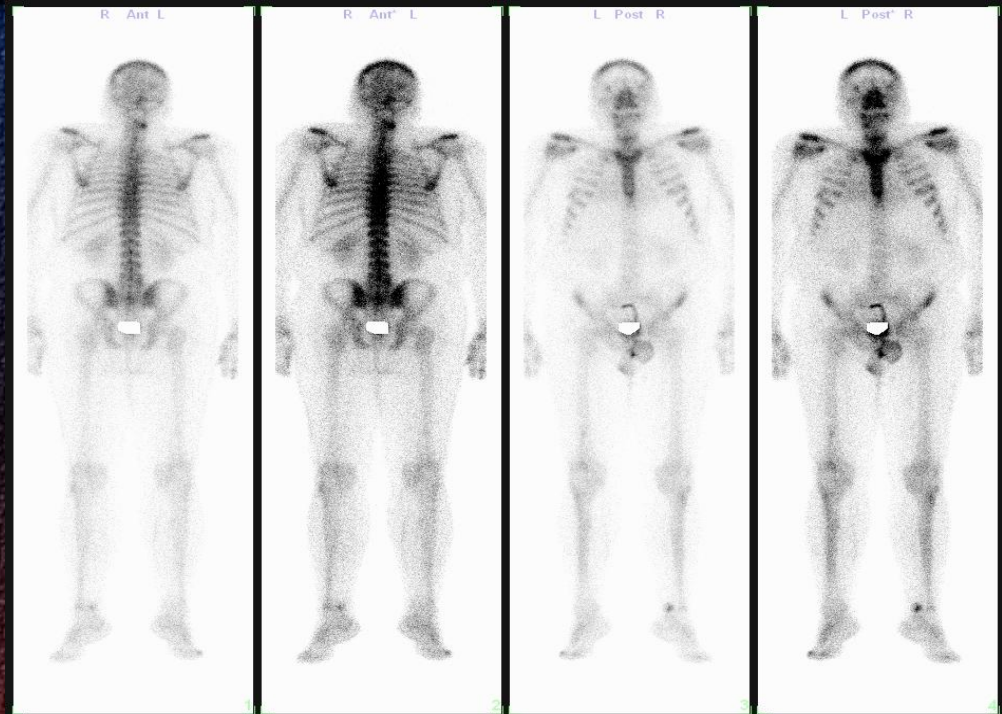
Super bone scan - prostatic cc.



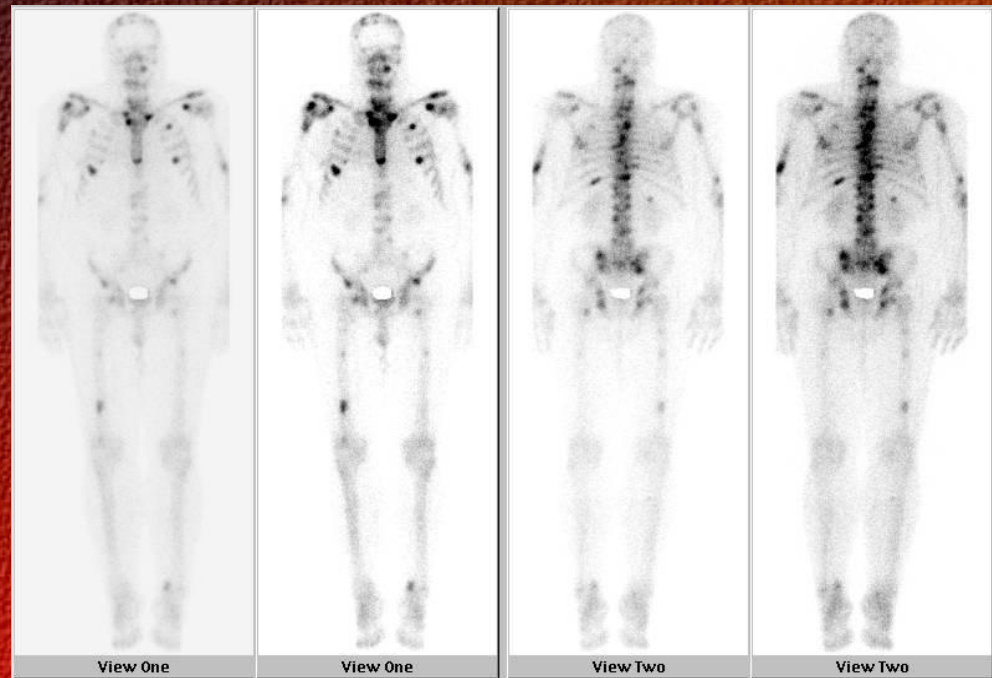
Follow-up
Bone metastases
progression

Tu. pulm.

19.01.2010



04.06.2010

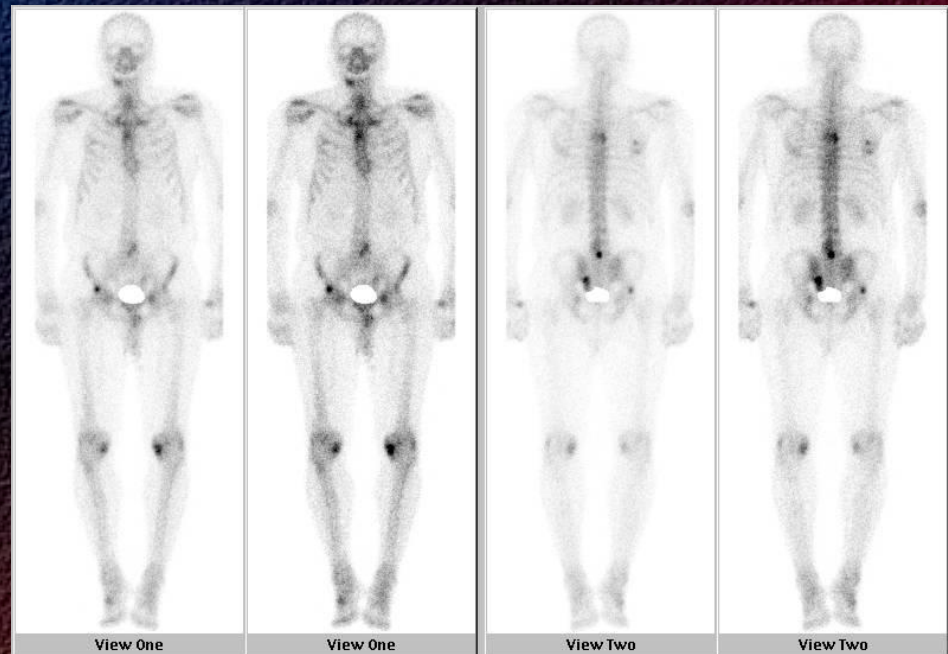


Follow-up

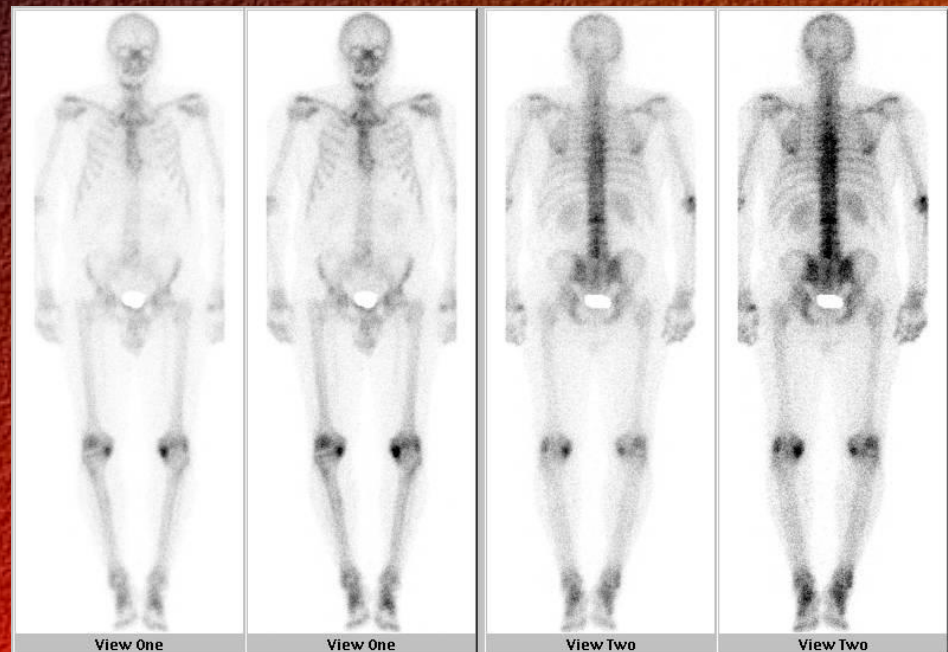
Bone metastases regression

Cc. Prostatæ

28.04.2009



14.10.2010



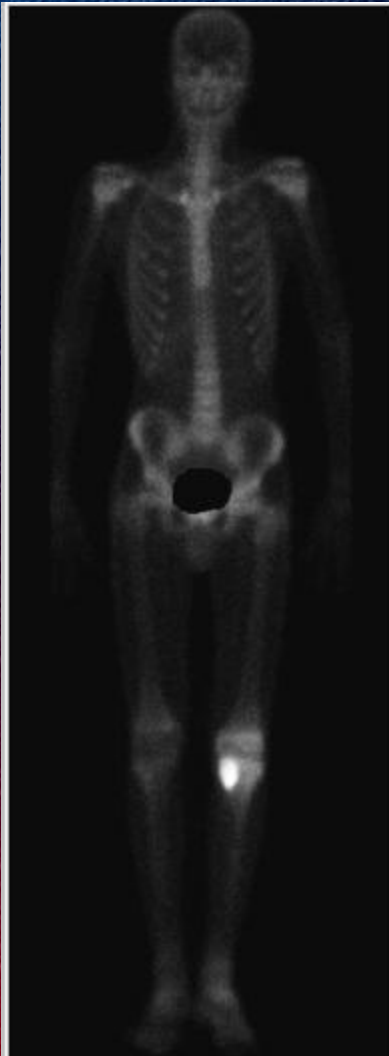
Primary bone tumours

three-phase bone scan

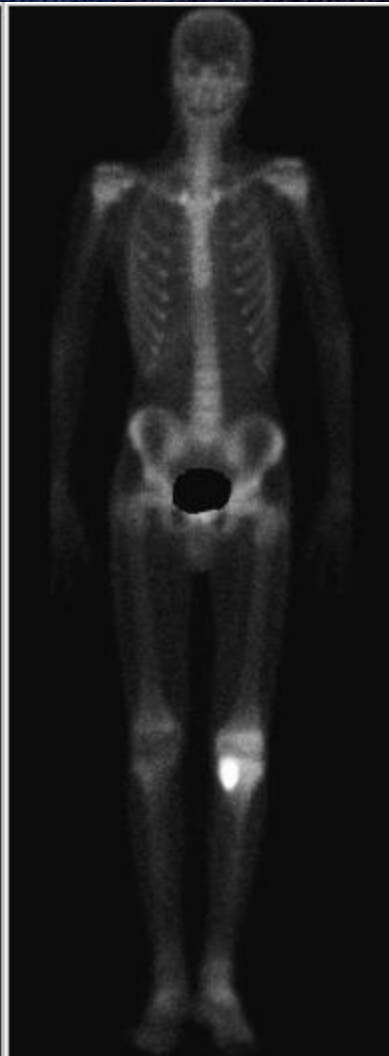
- perfusion phase (obtained during i.v. injection of the tracer, dynamic image acquisition)**
- blood-pool phase (5. min.)**
- bone phase (after 2-3 hours)**

Quantification of images may help to establish more specific diagnosis. (Pathological region compared to the contralateral normal, asymptomatic side, determination the activity rate)

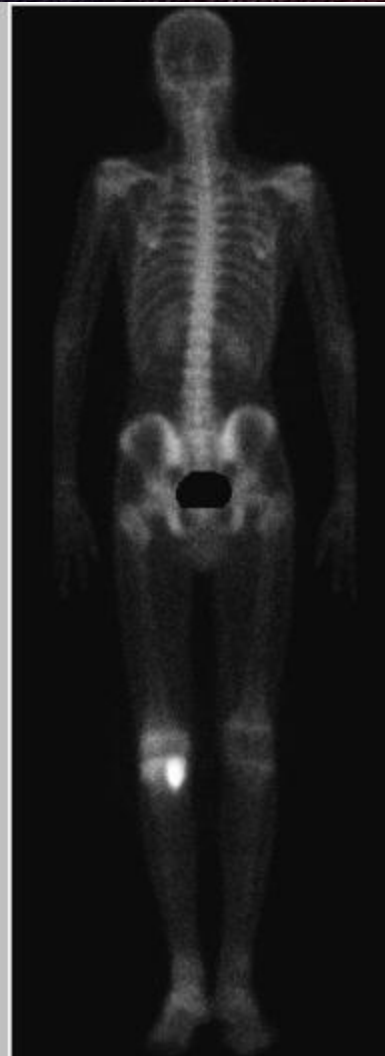
Osteosarcoma tibiae l.s.



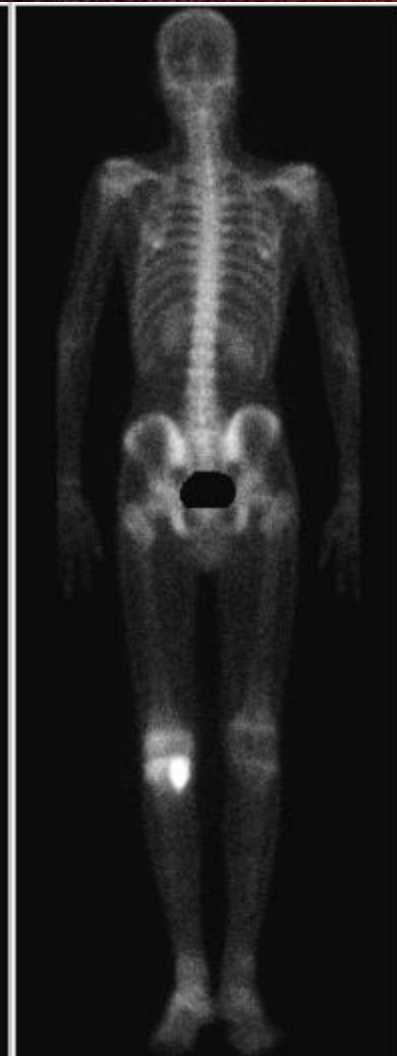
View One



View One

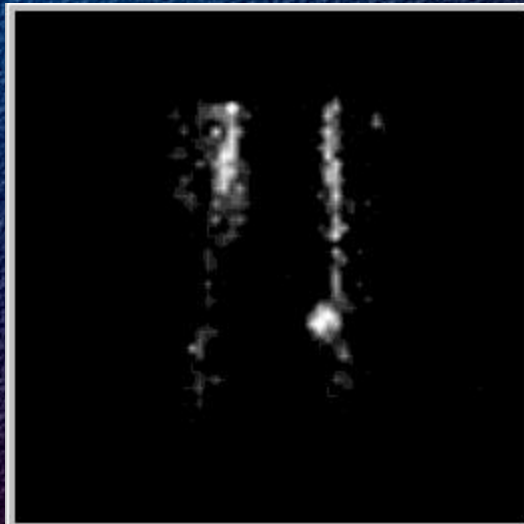


View Two

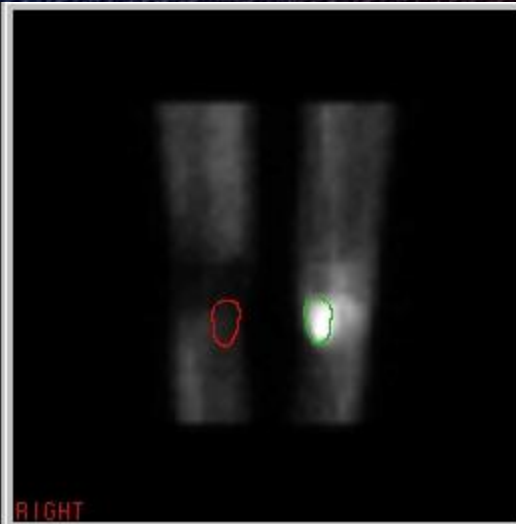


View Two

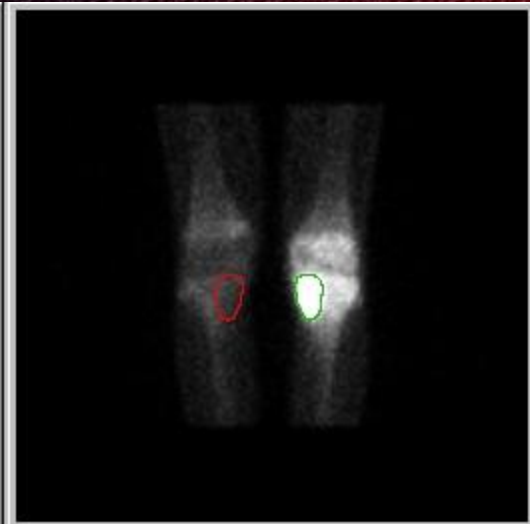
Osteosarcoma tibiae l.s. - three-phase bone scan



Phase 1 : Perfusion

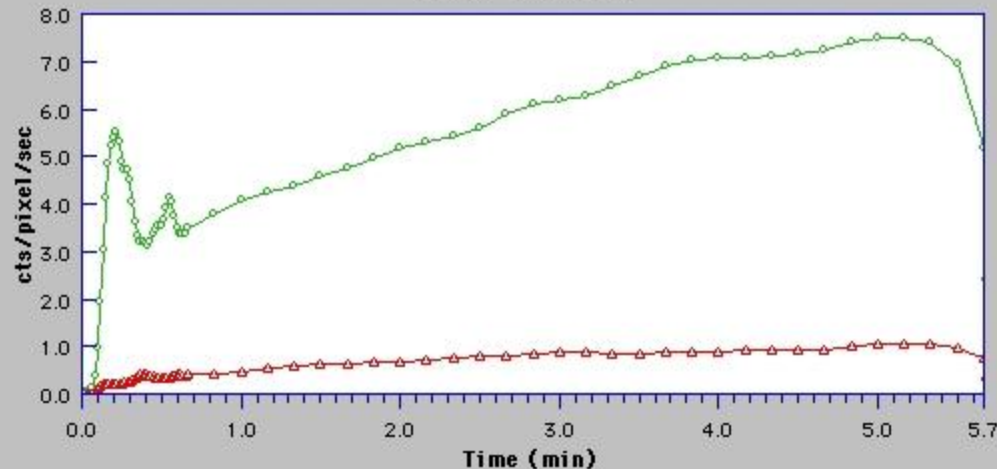


Phase 2 : Bloodpool



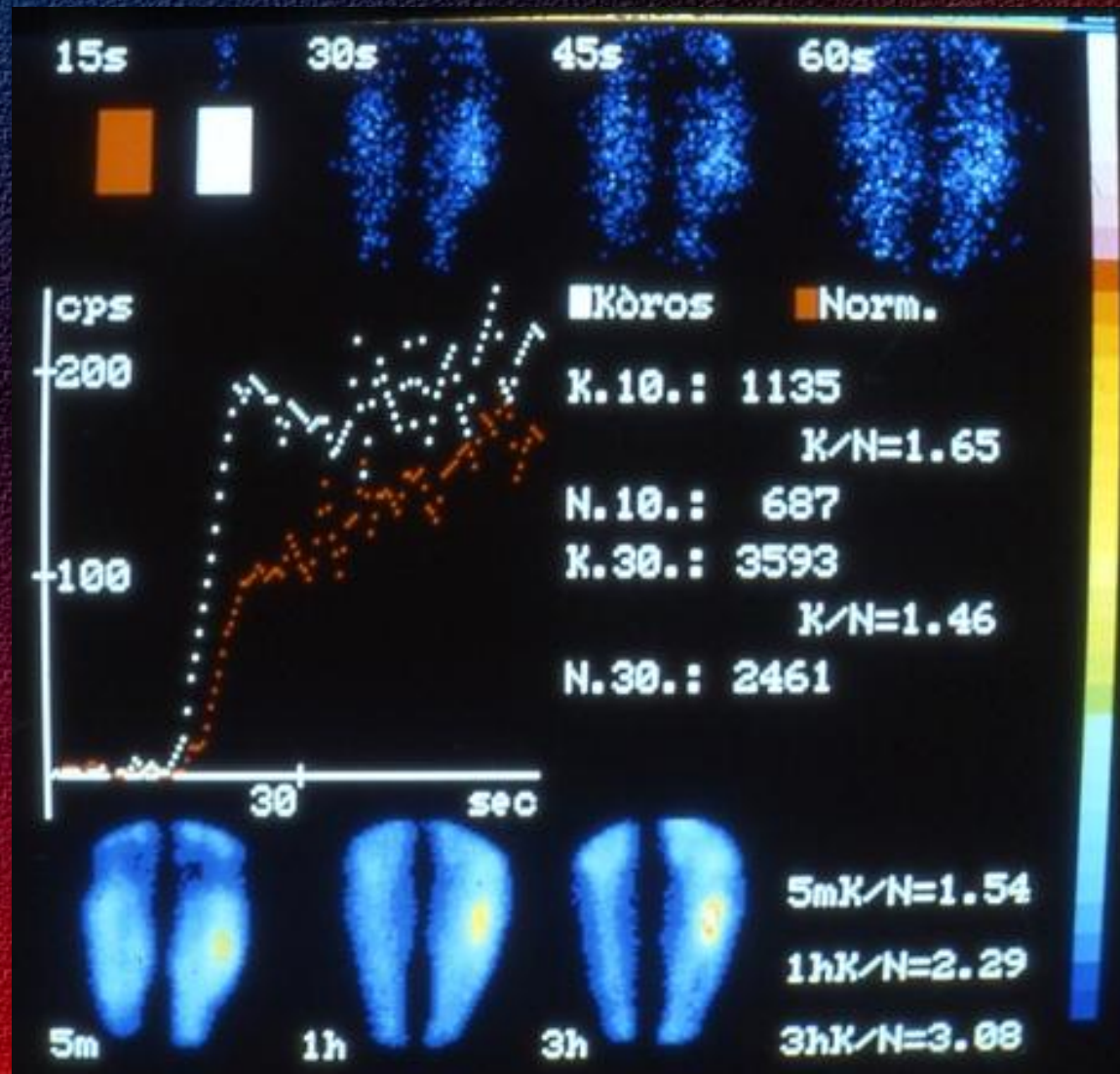
Phase 3 : Skeletal

Time Activity

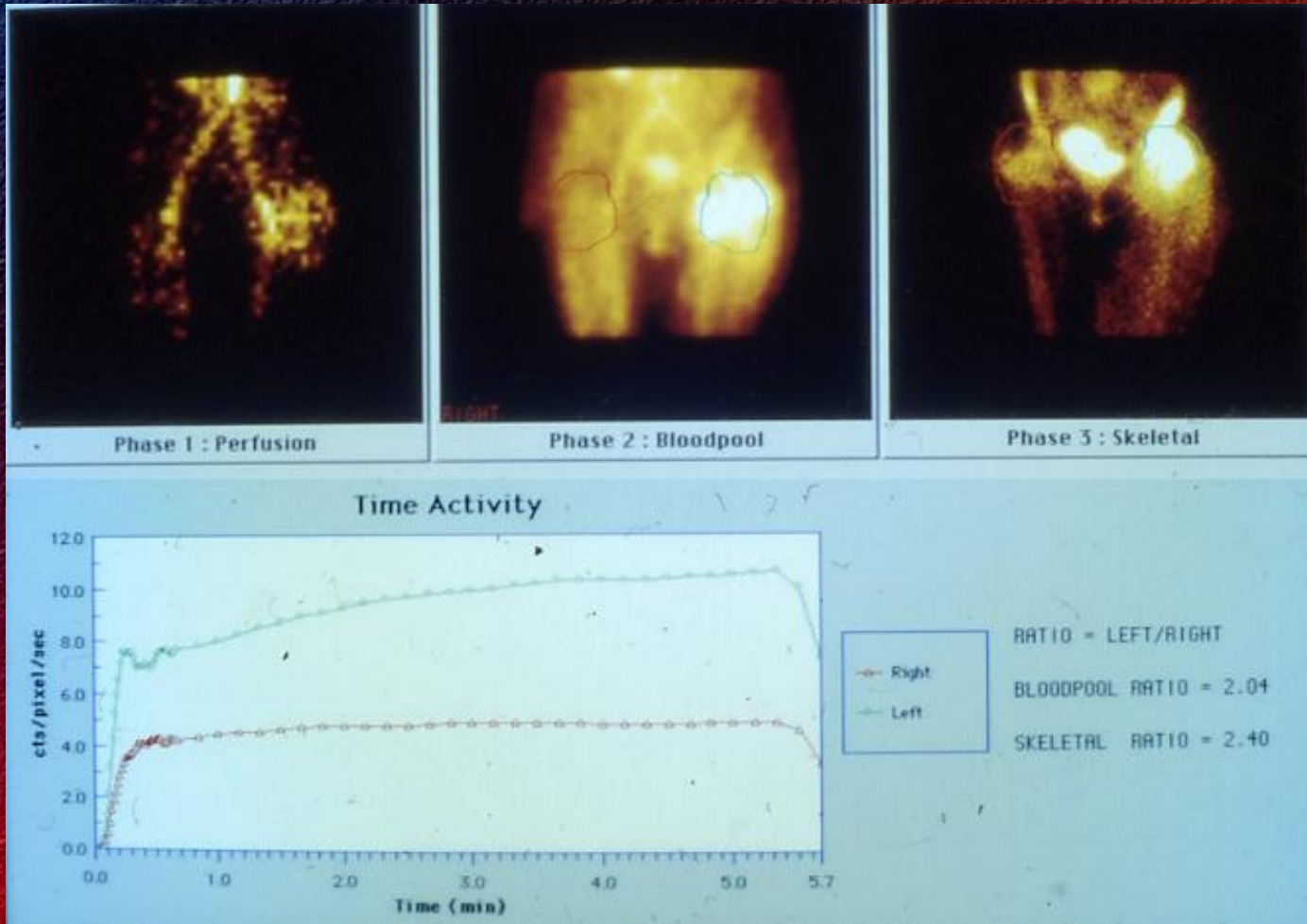


RATIO = LEFT/RIGHT
BLOODPOOL RATIO = 7.40
SKELETAL RATIO = 10.31

Ewing's sarcoma



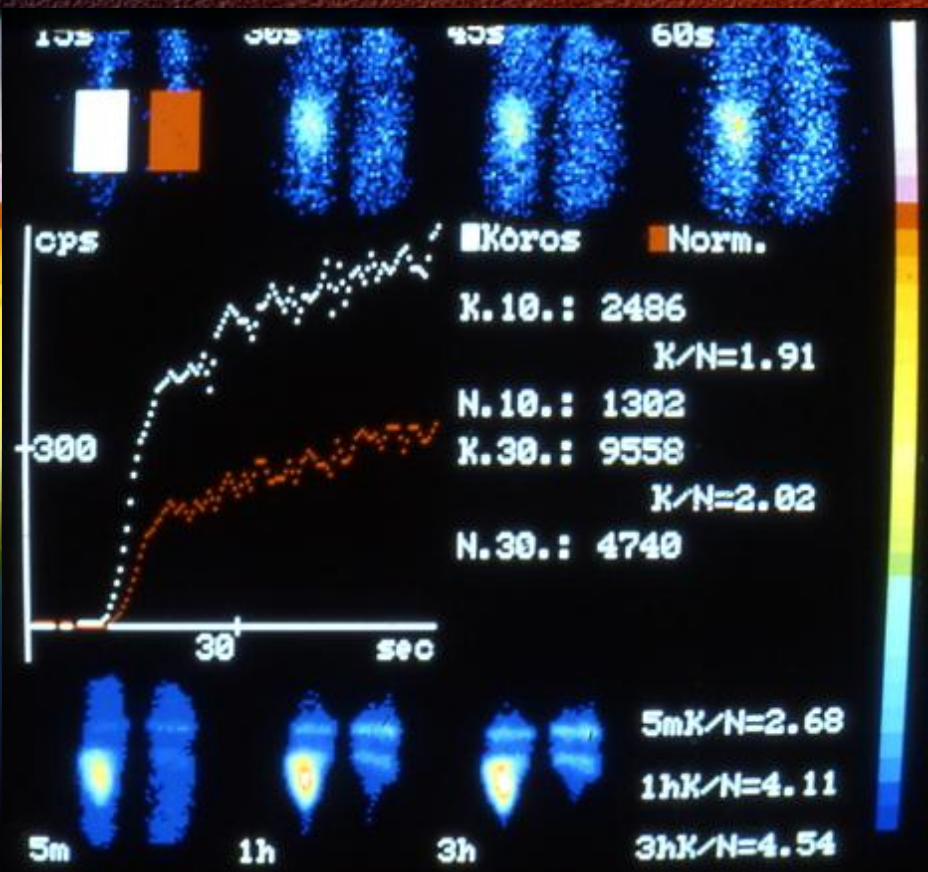
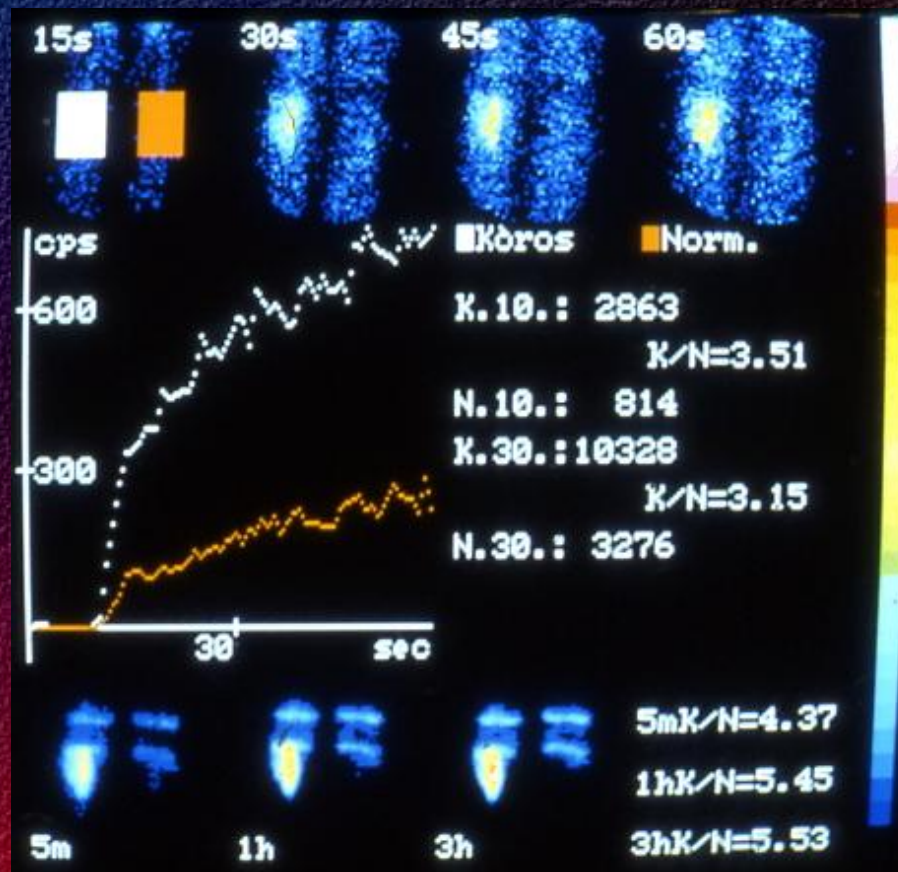
Primary malignant lymphoma



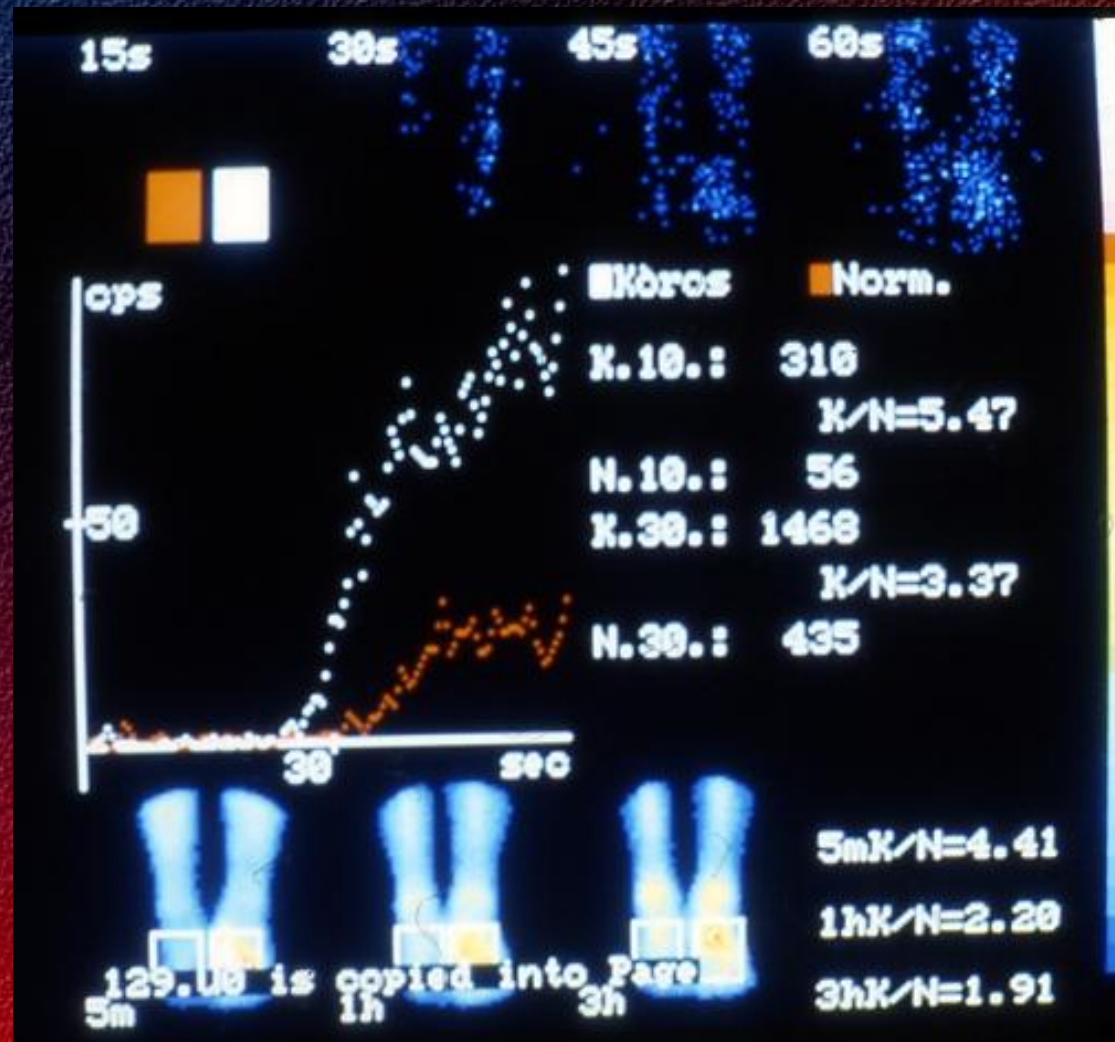
Osteosarcoma

Before therapy

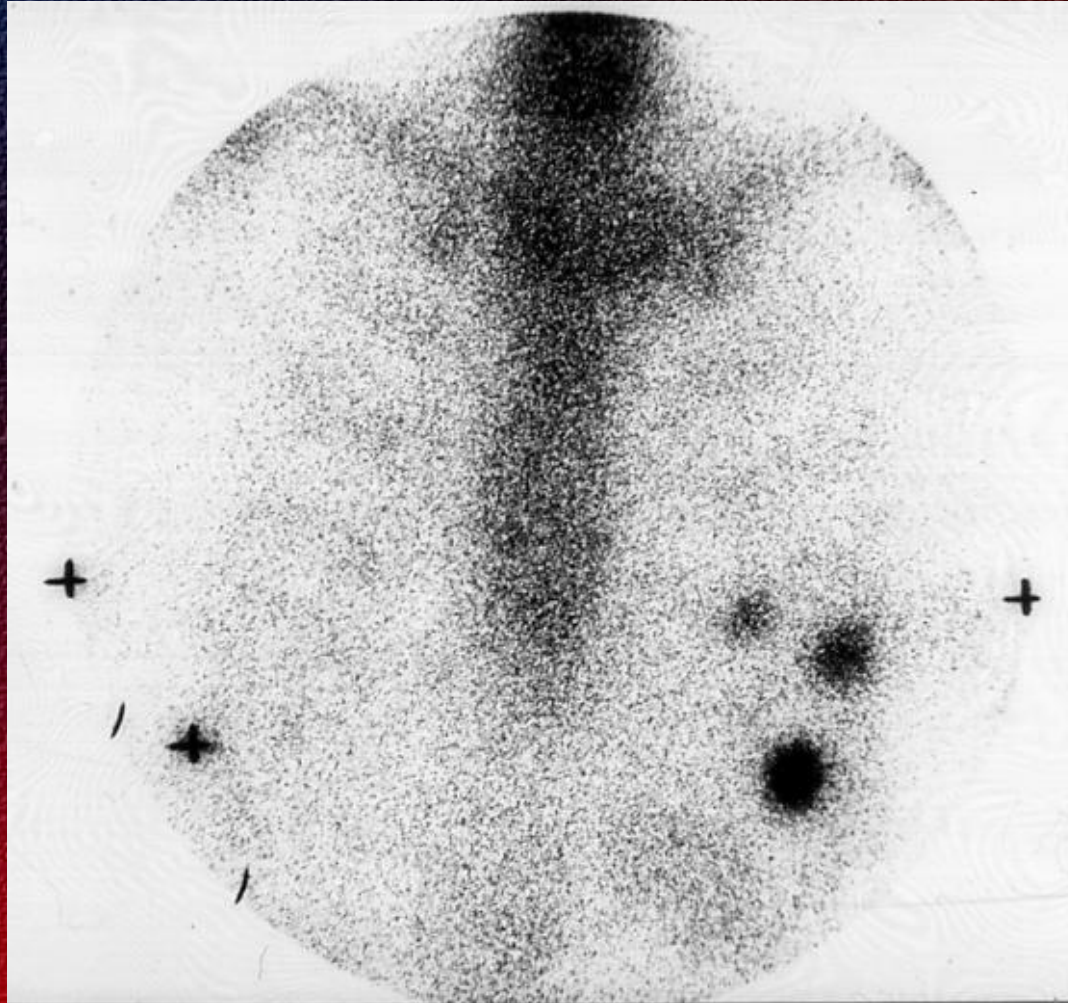
After therapy



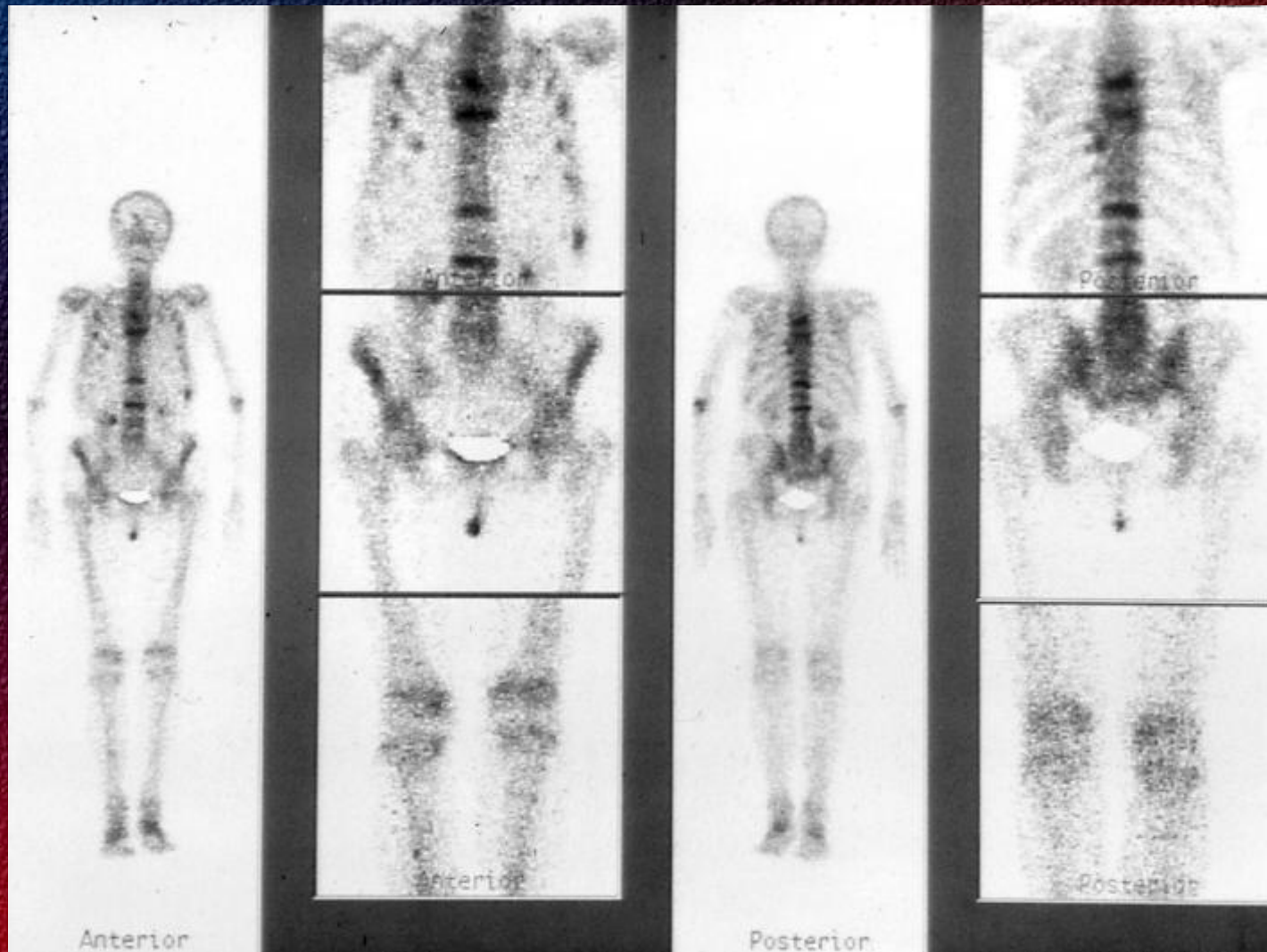
Haemangioma



Rib fractures (traumatic)



Osteoporosis (multiplex fractures)

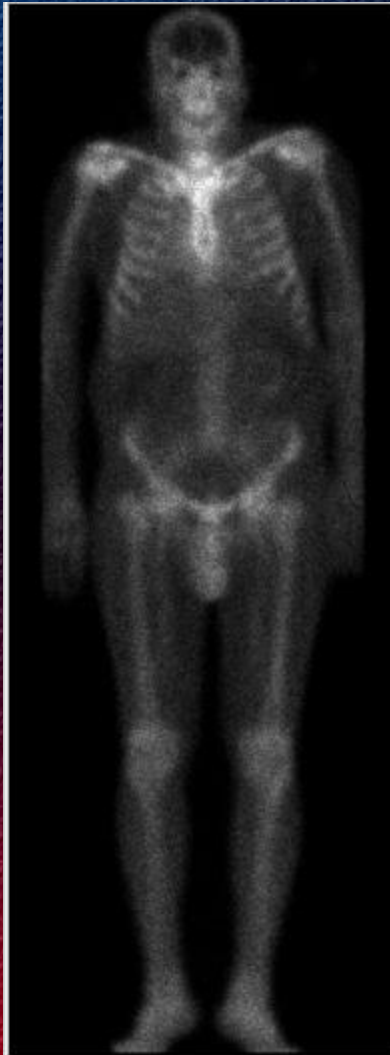


Sudeck's syndrome

(reflex sympathetic dystrophy, algodystrophy)



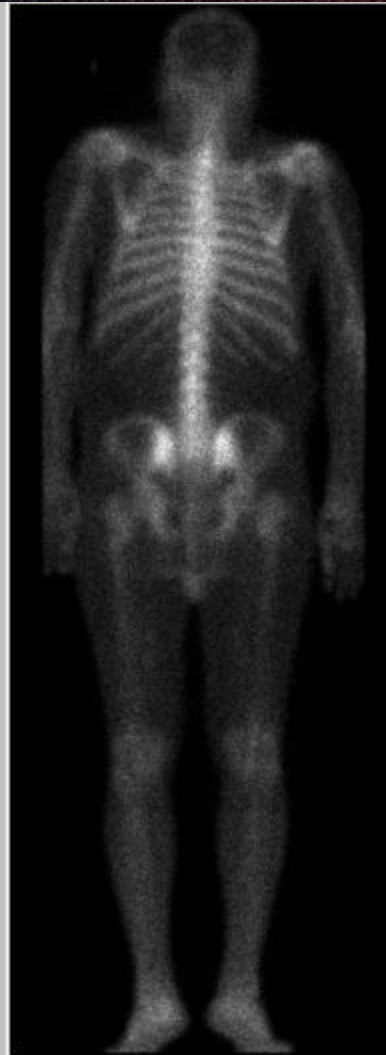
Hyperparathyreosis



View One



View One



View Two

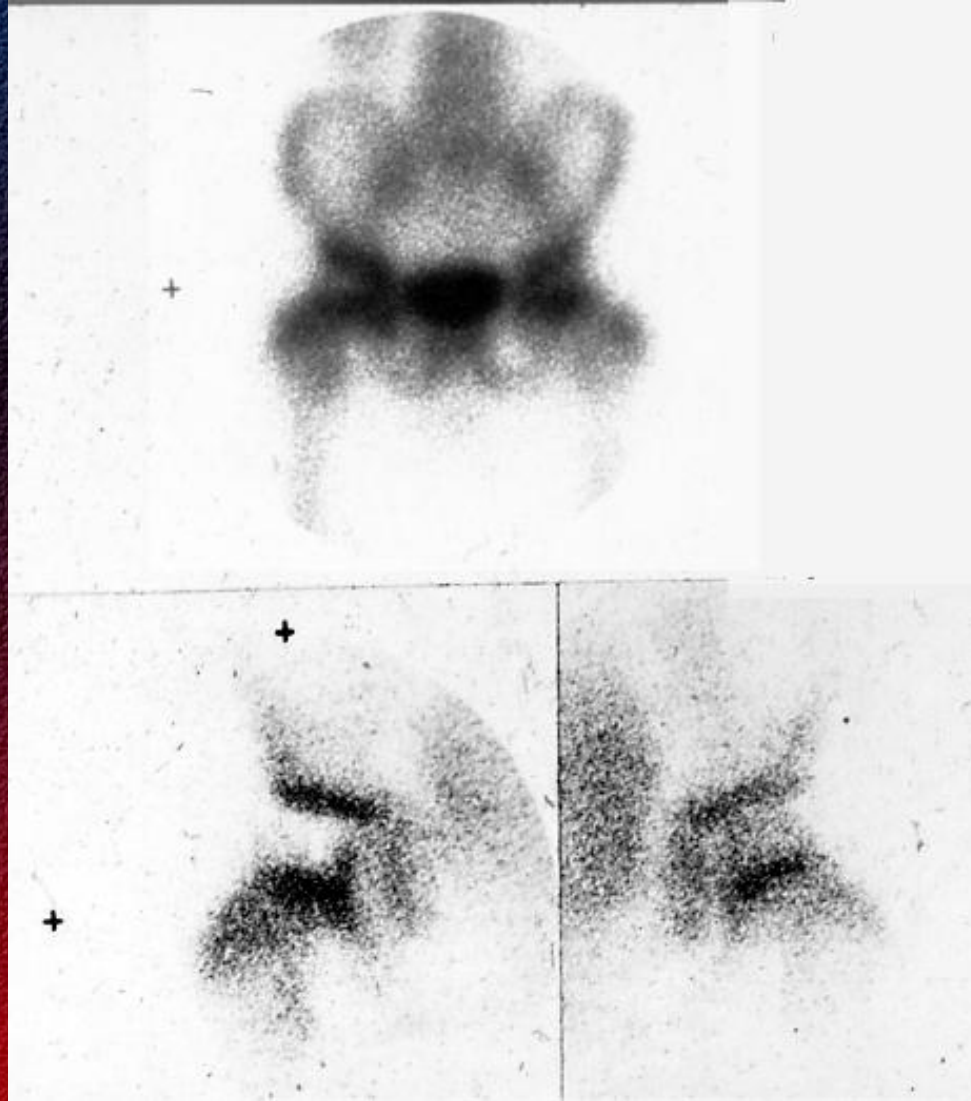


View Two

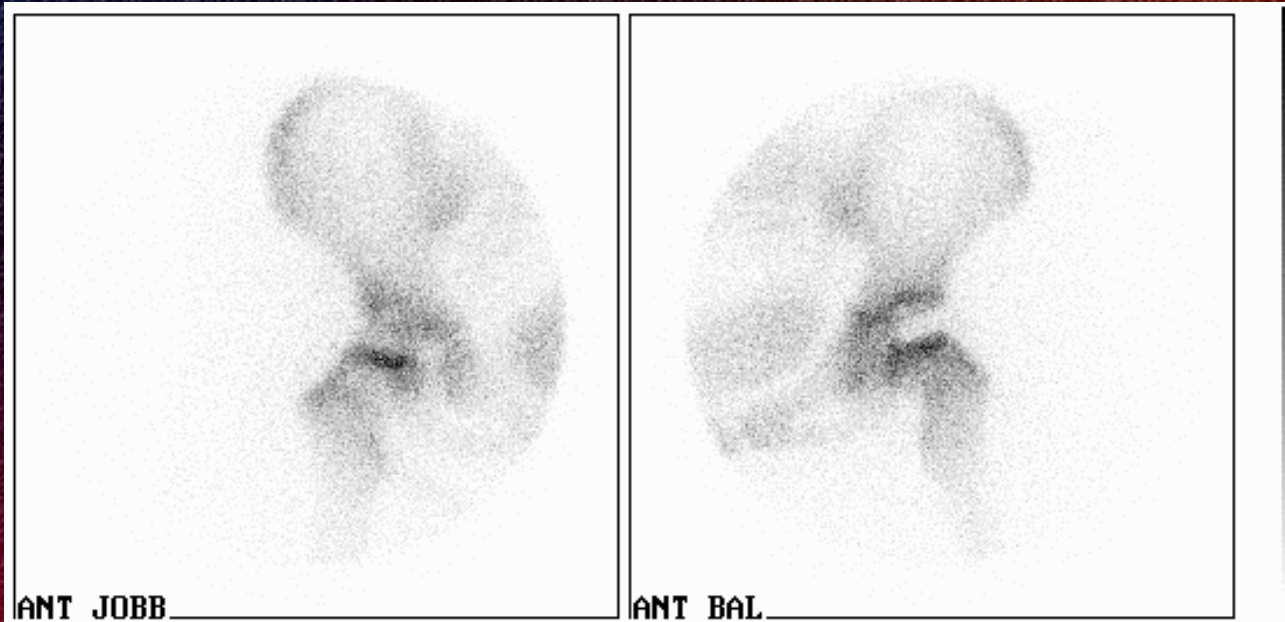
„Negative” bone scan

- **Pathological the decreased activity (!)**
- **Abscence or necrosis of the bone tissue**
- **Occurrence:**
 - **Morbus Perthes**
 - **after radiotherapy**
 - **osteolytic bone destruction**

Osteonecrosis (M. Perthes)

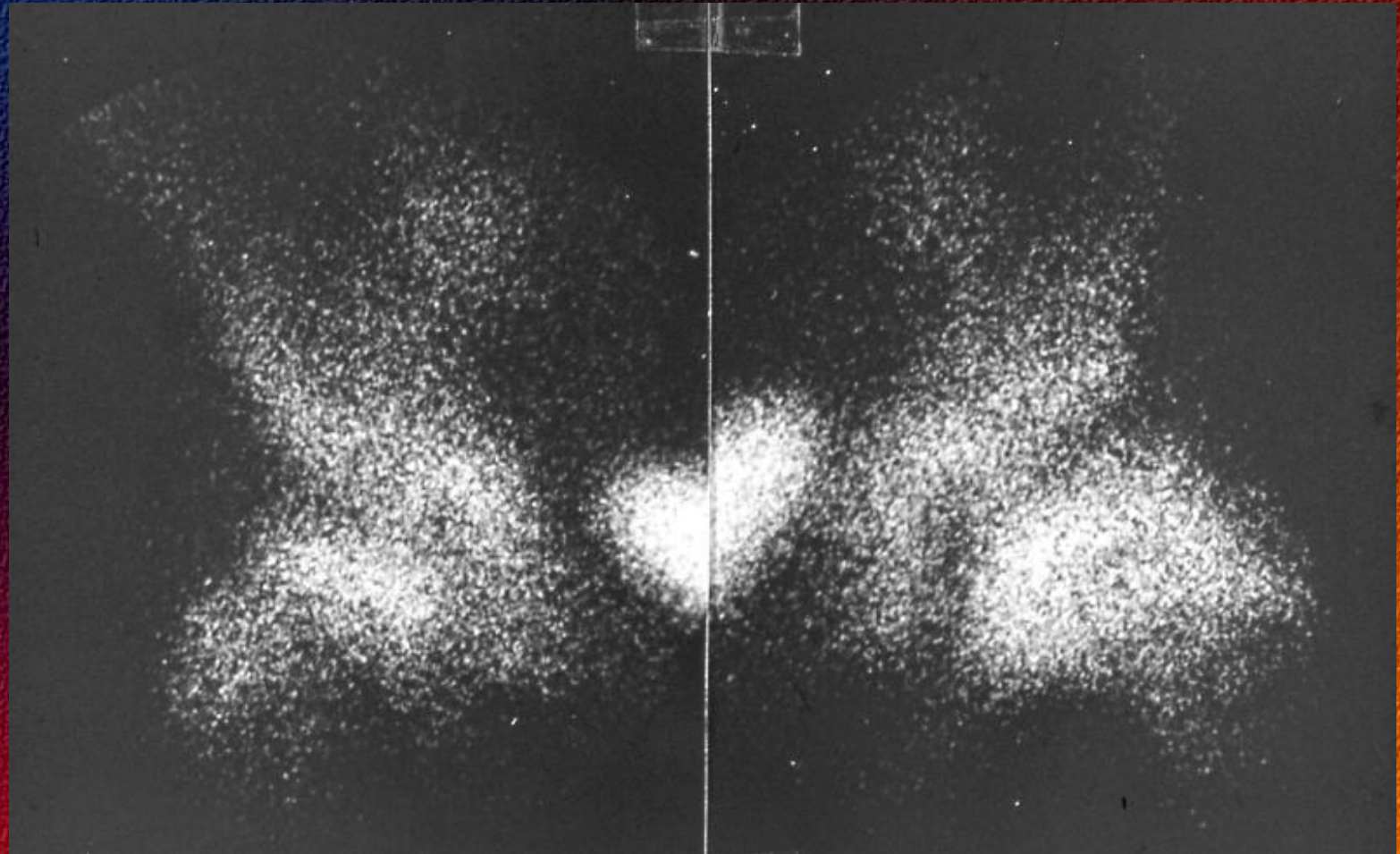


Osteonecrosis (M. Perthes)

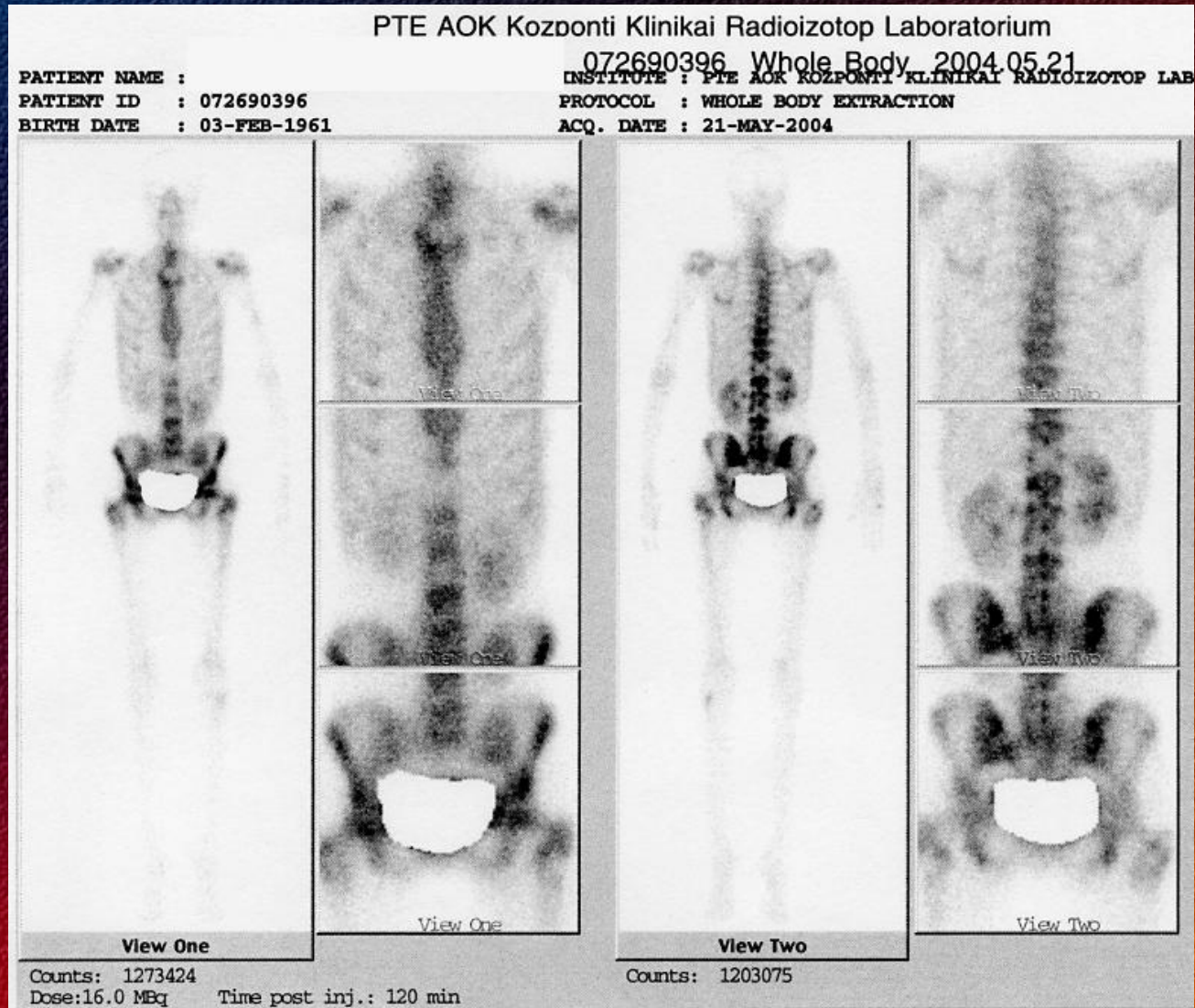


Osteonecrosis

(M. Perthes –advanced phase)



Cold lesions – therapy (Vertebroplastia)



Inflammation of the bone tissue

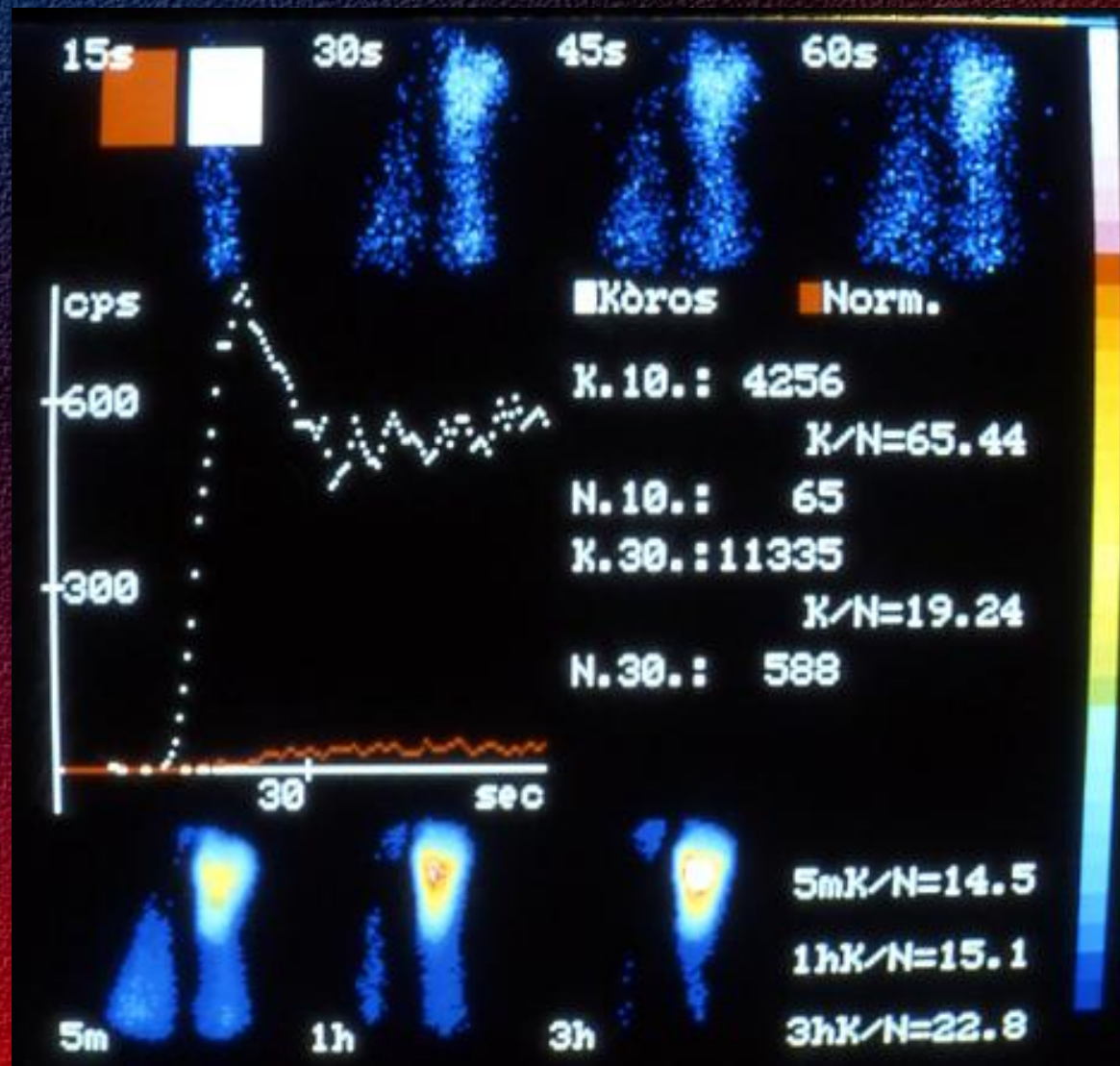
- **Aspecific method:**

three-phase bone scan

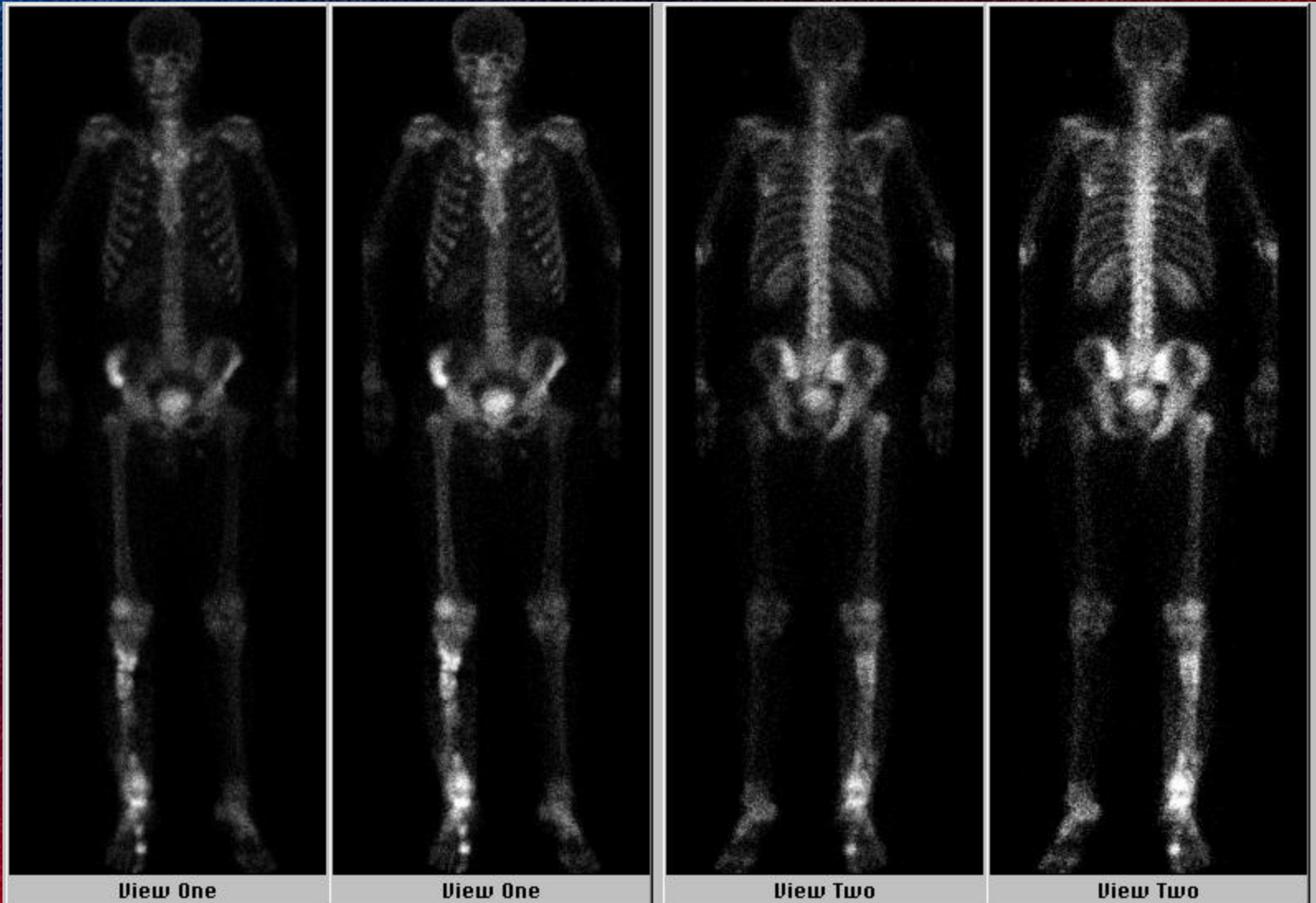
- perfusion phase (obtained during i.v. injection of the tracer)
- blood-pool phase (5. min.)
- bone phase (after 120 min.)

Quantification (Pathological region compared to the contralateral normal, asymptomatic side.)

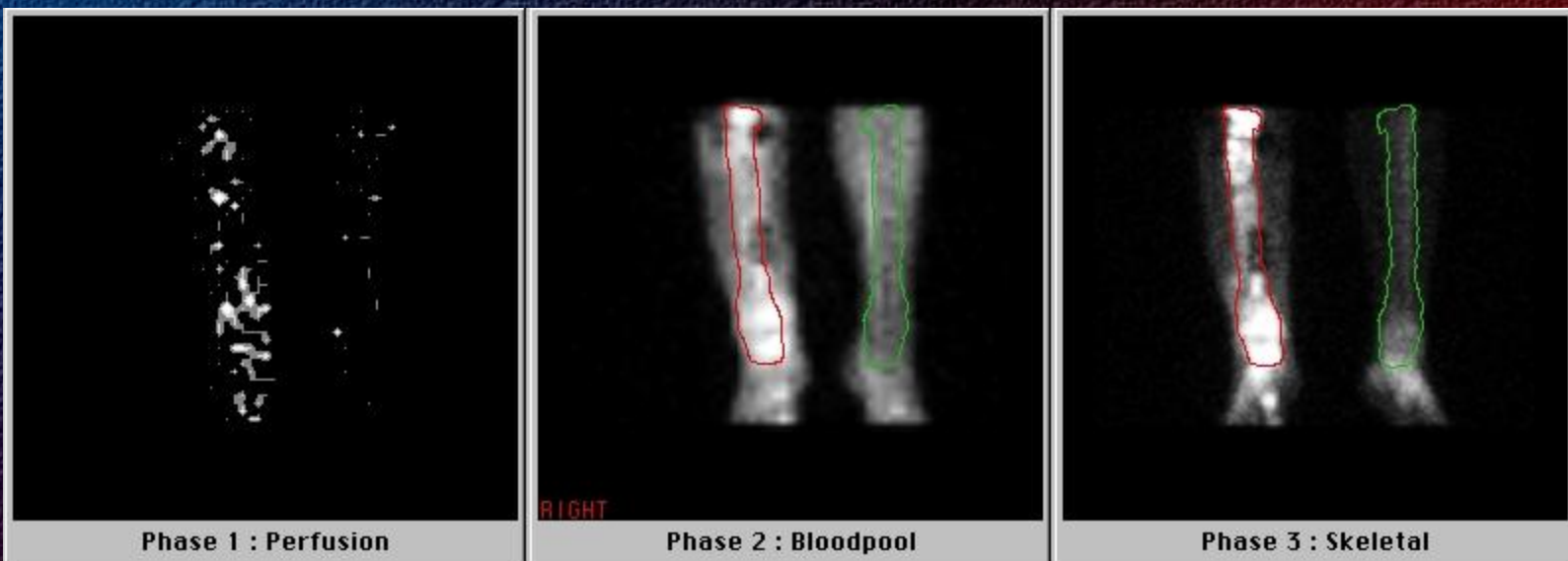
Acute osteomyelitis



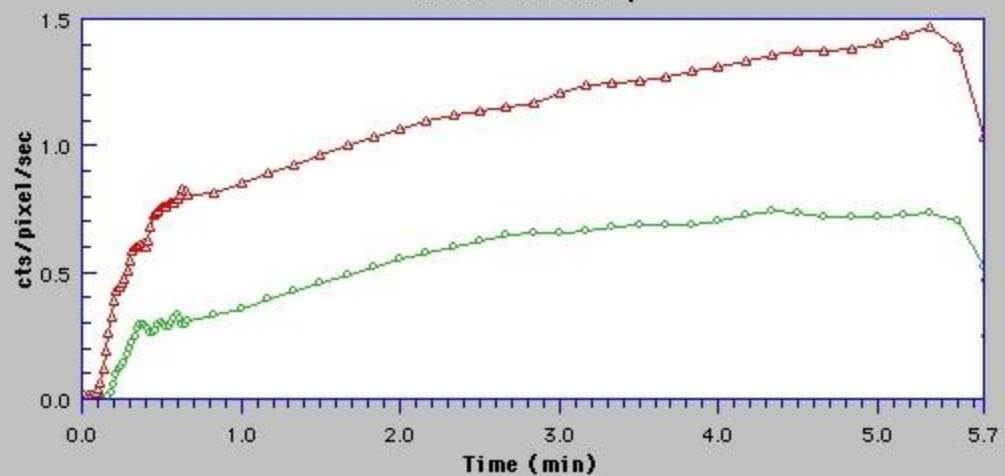
Osteomyelitis tibiae l.d. (chronic)



Osteomyelitis tibiae l.d. – three phase bone scan



Time Activity



RATIO = LEFT/RIGHT

BLOODPOOL RATIO = 0.54

SKELETAL RATIO = 0.23

Specific method

- **Injected subject :** - labeled white blood cells
- monoclonal antiganulo-
cytes antibody
- **Dose:** 400-800 MBq
- **Admisistration:** intravenously
- **Imaging:** 3-6-24 hours after admi-
nistration, whole body,
static and SPECT image

Loosening of hip prostheses? Infection?

Anterior



99mTc-MDP



**99mTc-anti-granulocytes
antibody**

Loosening of hip prostheses? Infection?

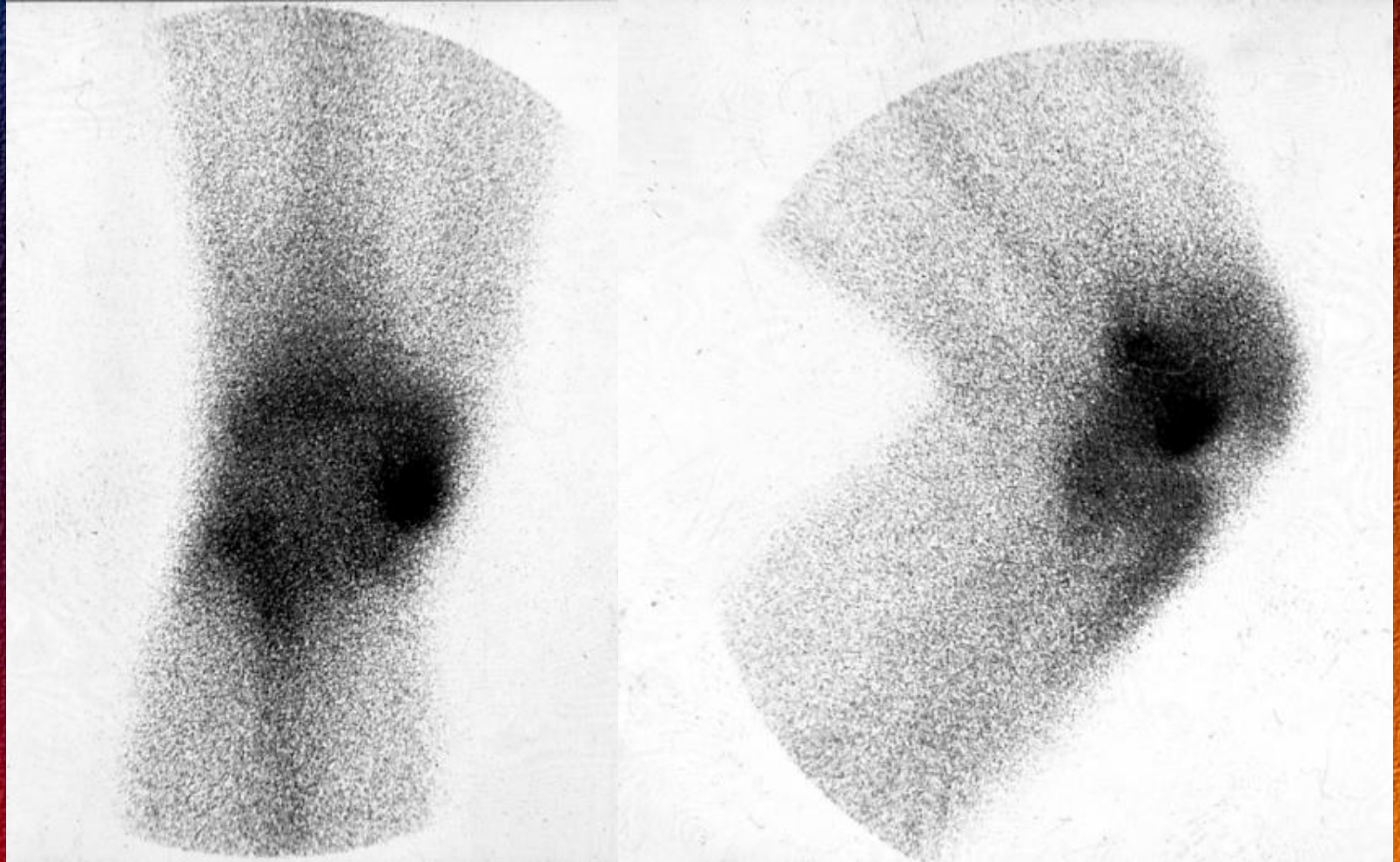


99mTc-MDP

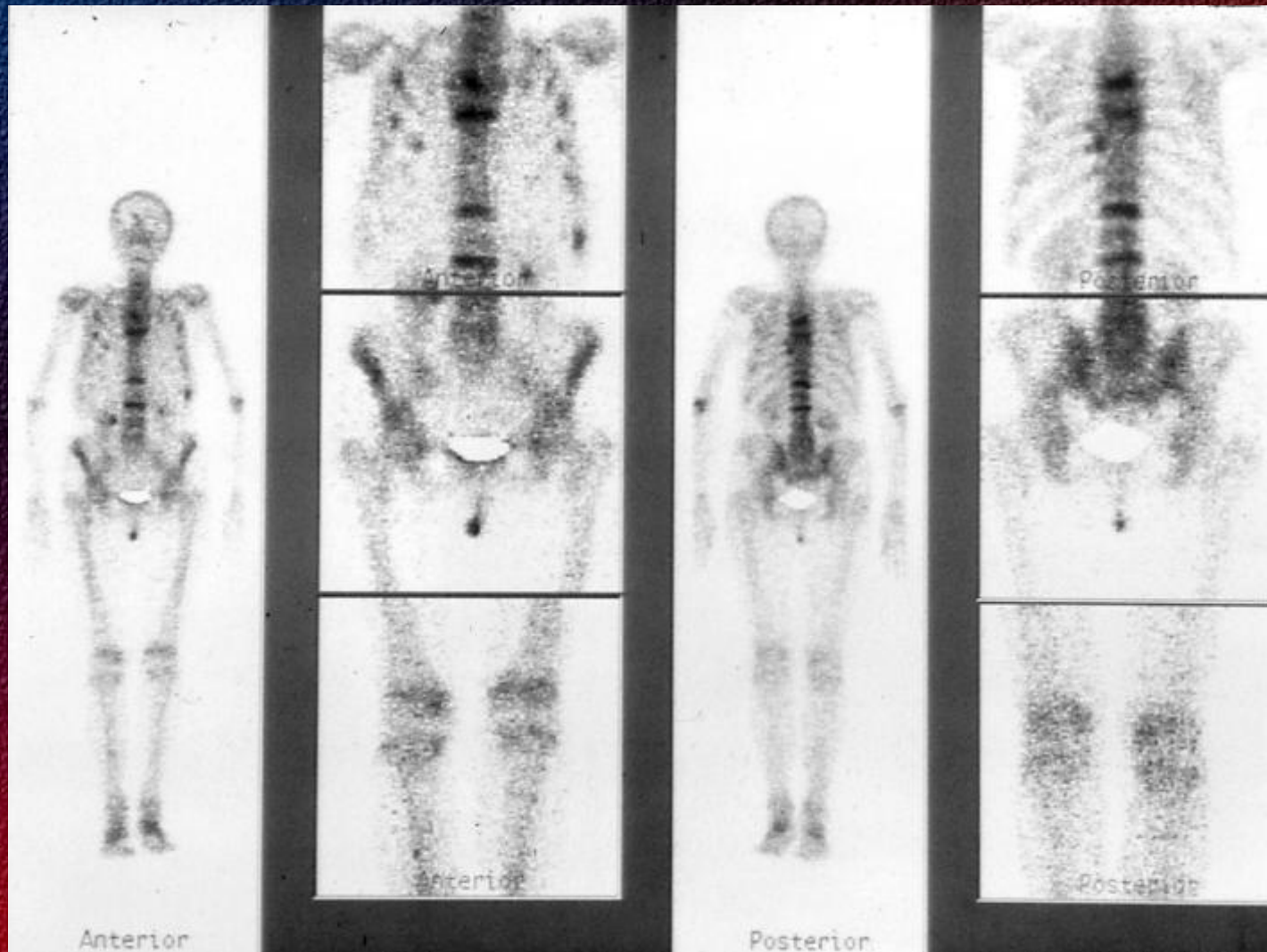


**99mTc-anti-granulocytes
antibody**

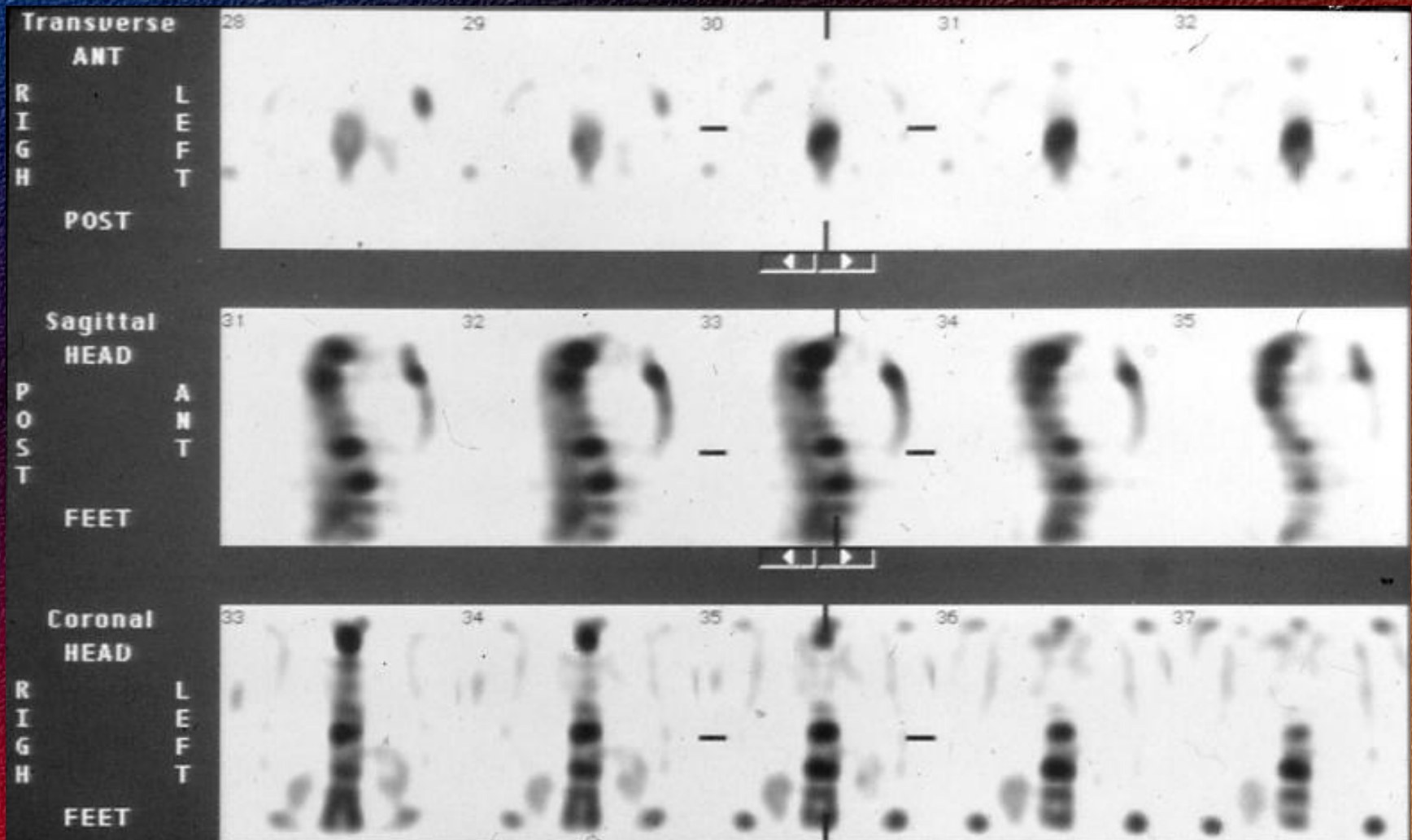
Arthritis (and arthrosis)



Osteoporosis (multiplex fractures)

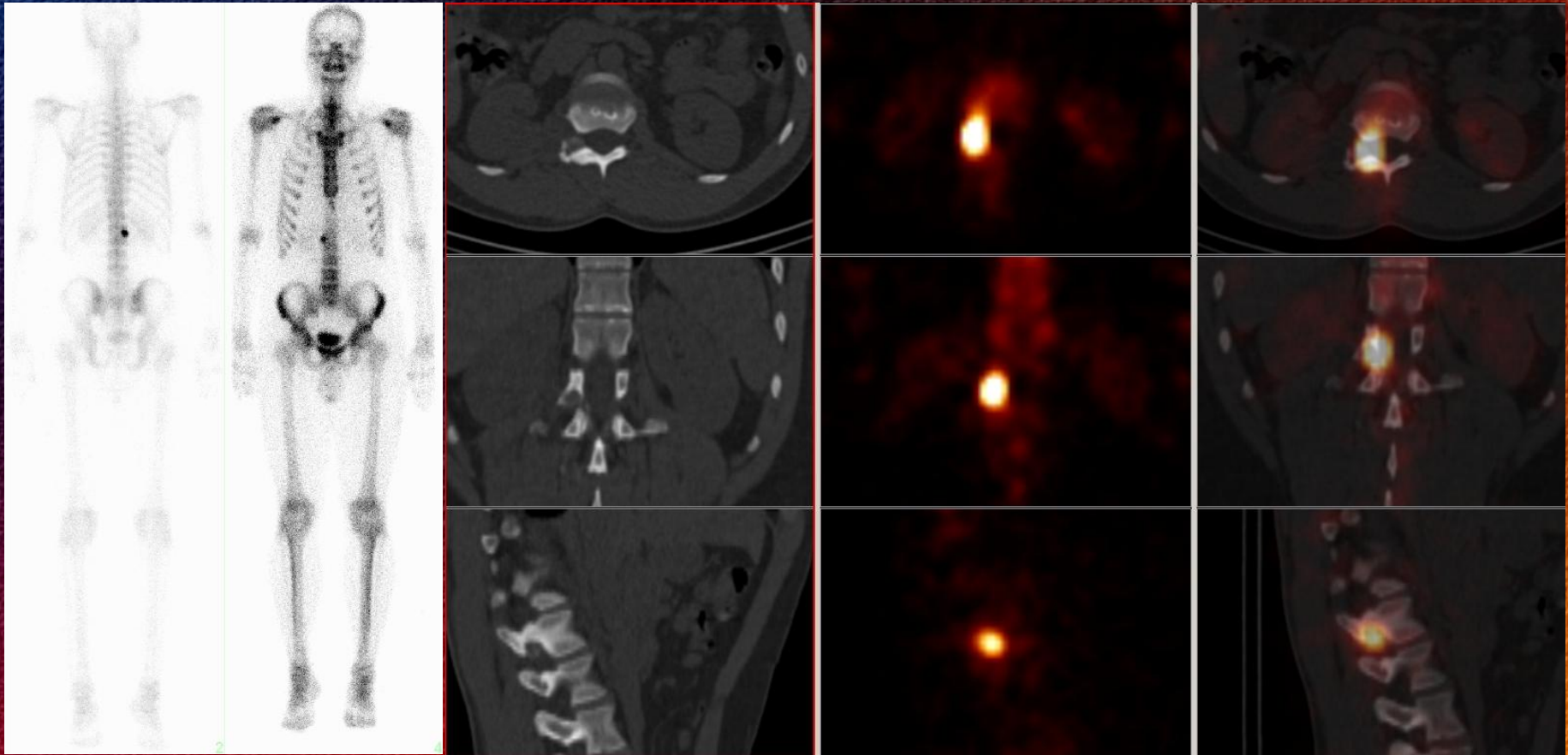


SPECT- image of the spine (osteoporosis)



SPECT-CT, recurrence of osteoid osteoma

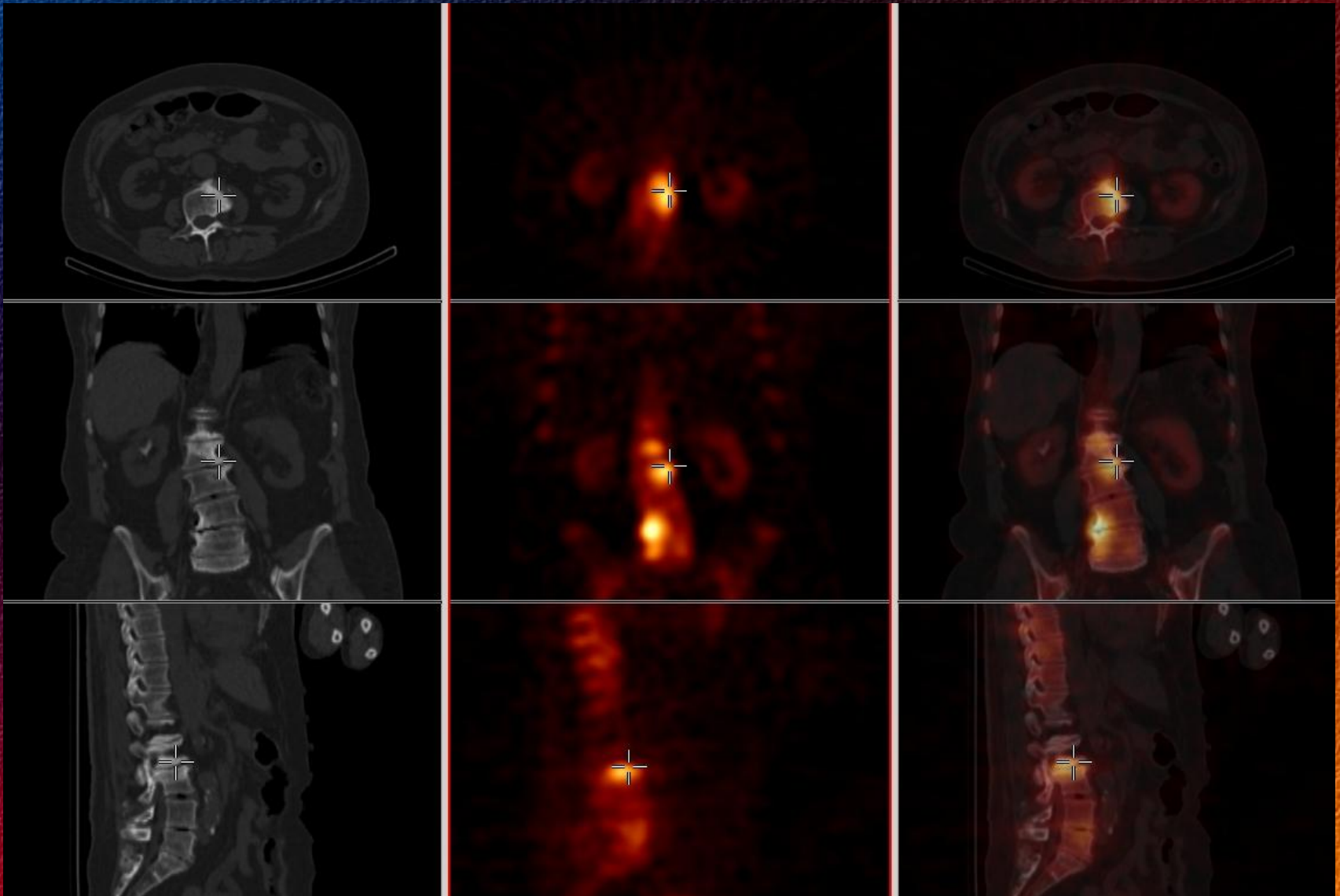
(processus transversus of L.I. vertebra)



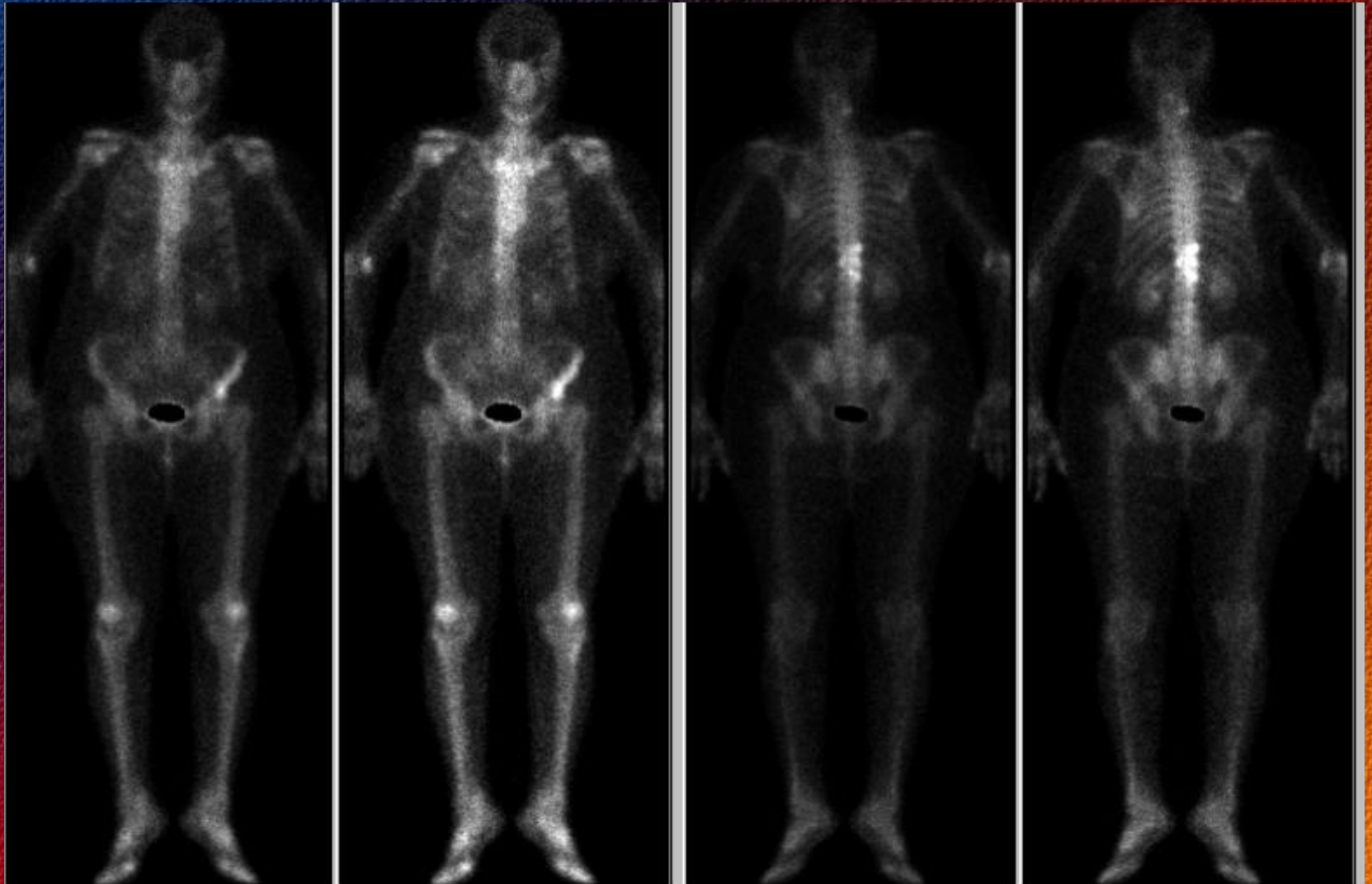
Multifocal hot-spots in the lumbar spine



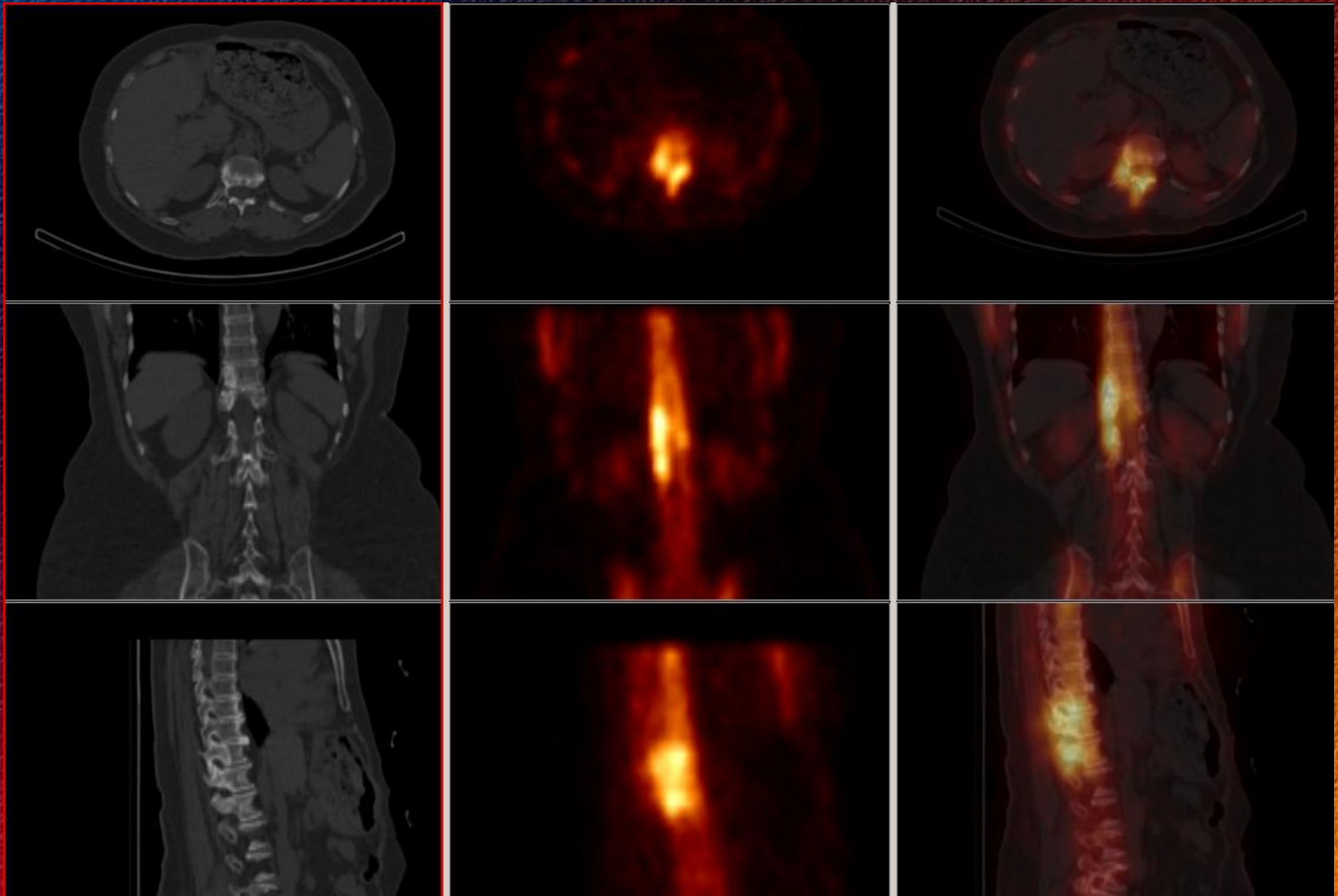
Degenerative changes



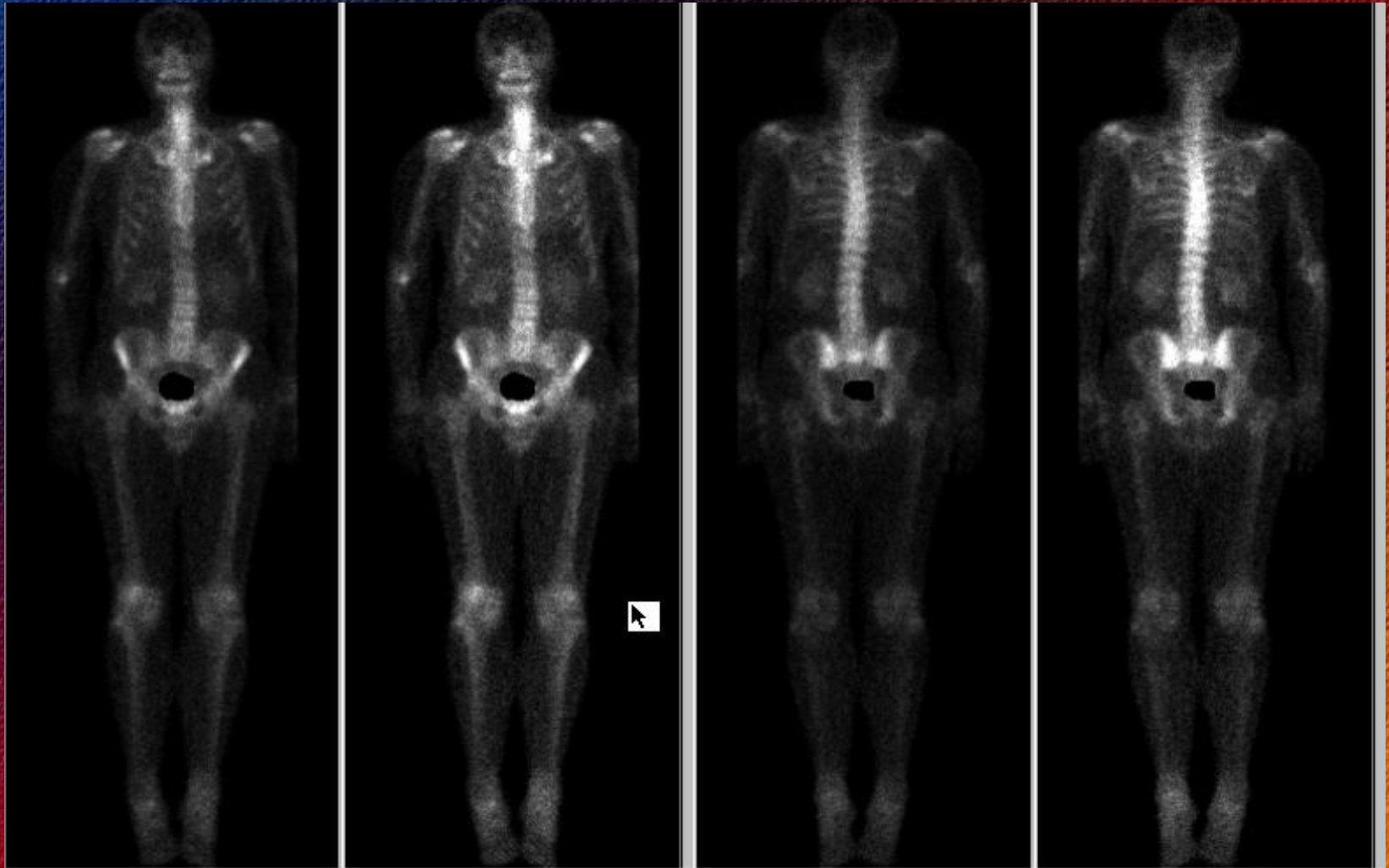
Multifocal hot-spots in the Th-L spine (breast cc.)



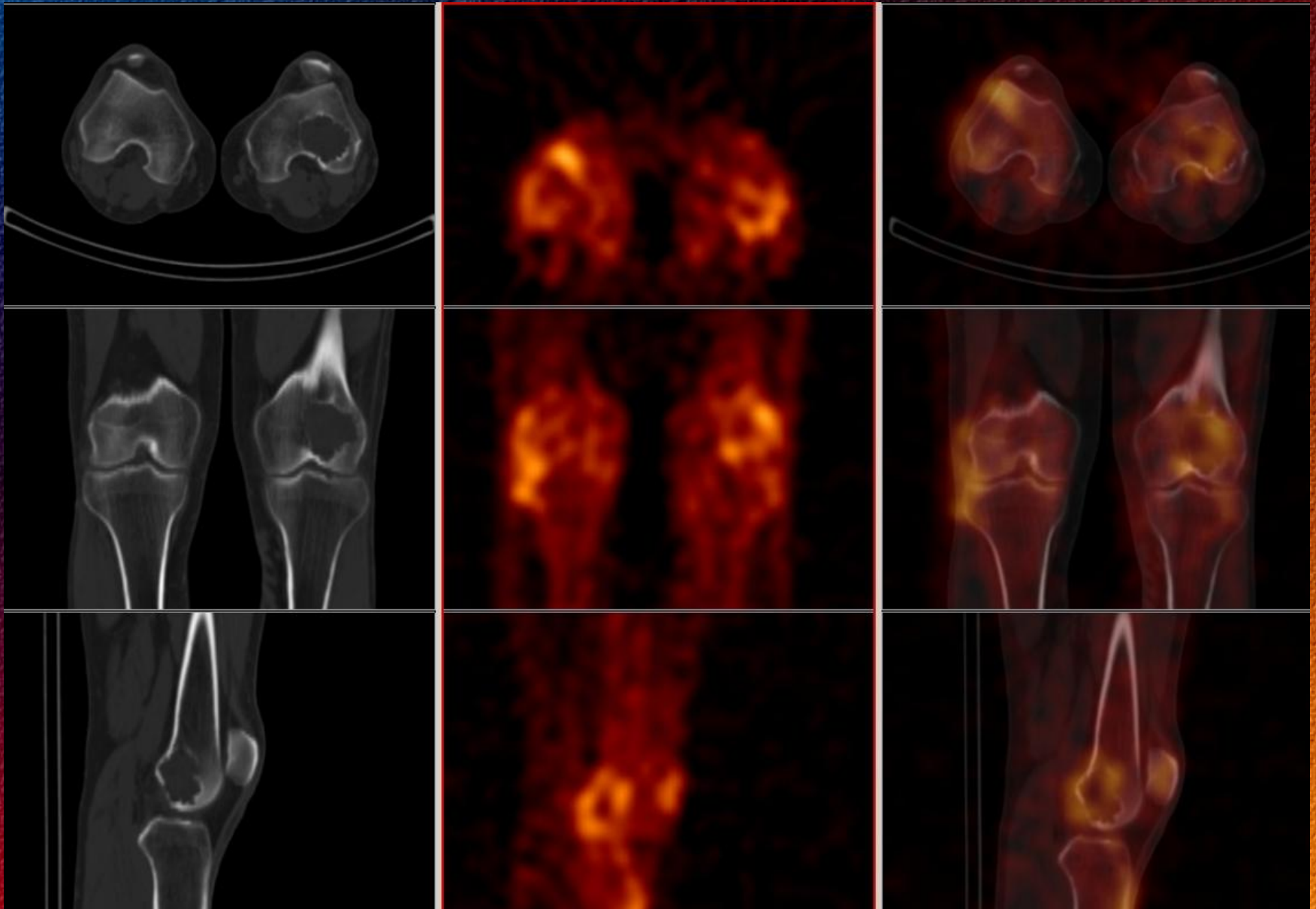
Metastases in the vertebrae – breast cc.



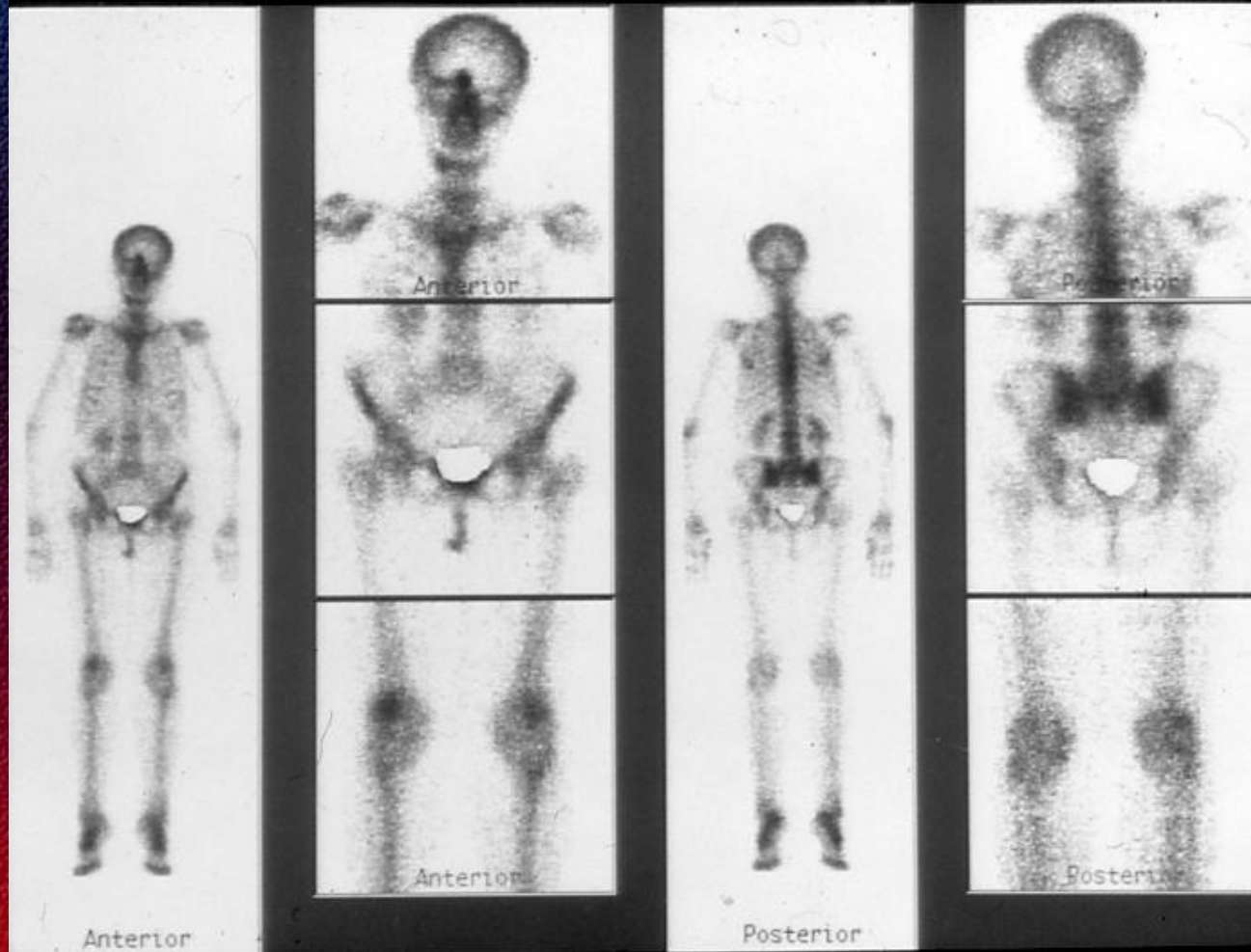
Lytical area in the left femur condyle



Lytical area in the left femur condyle

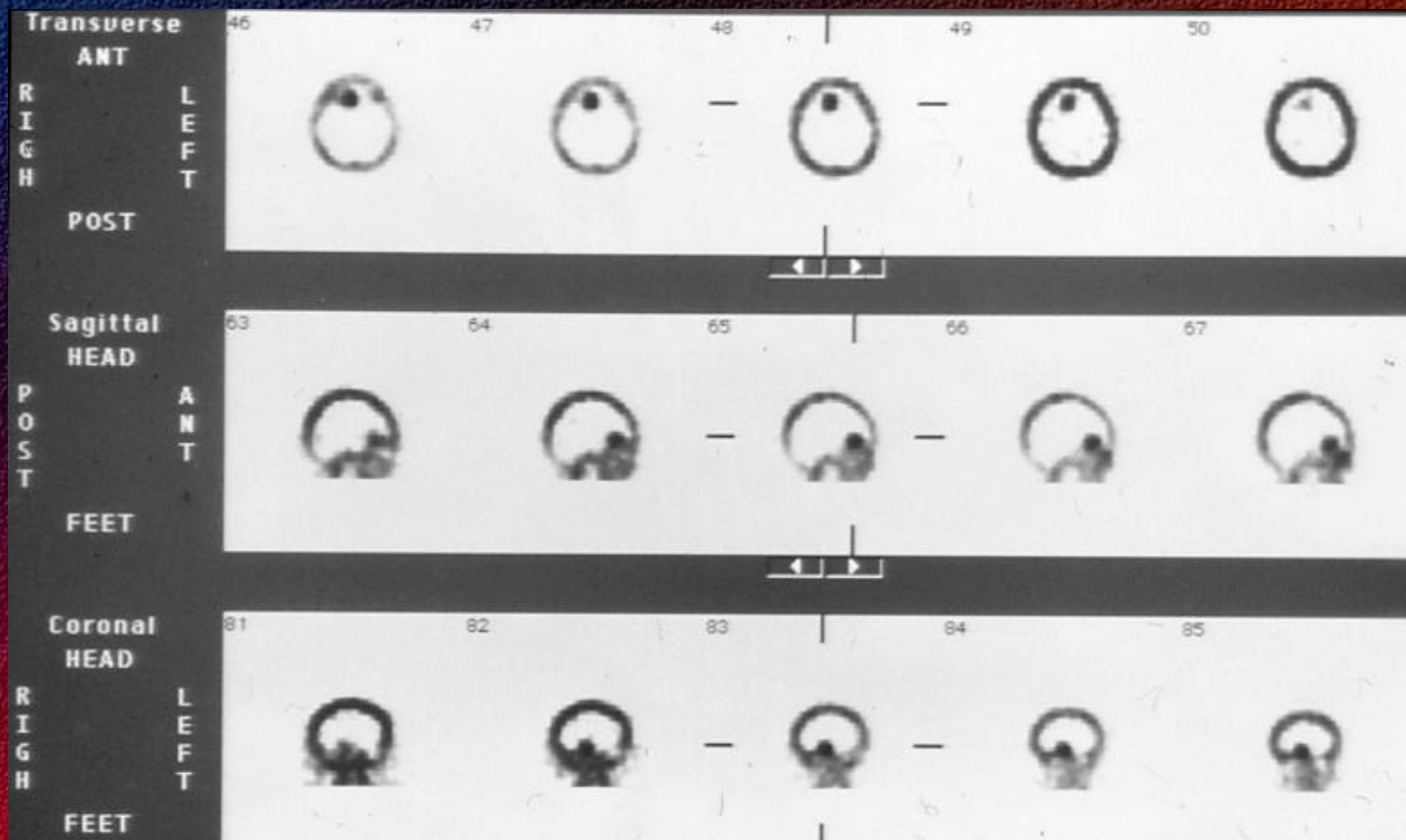


Extraosseal phosphate cumulation

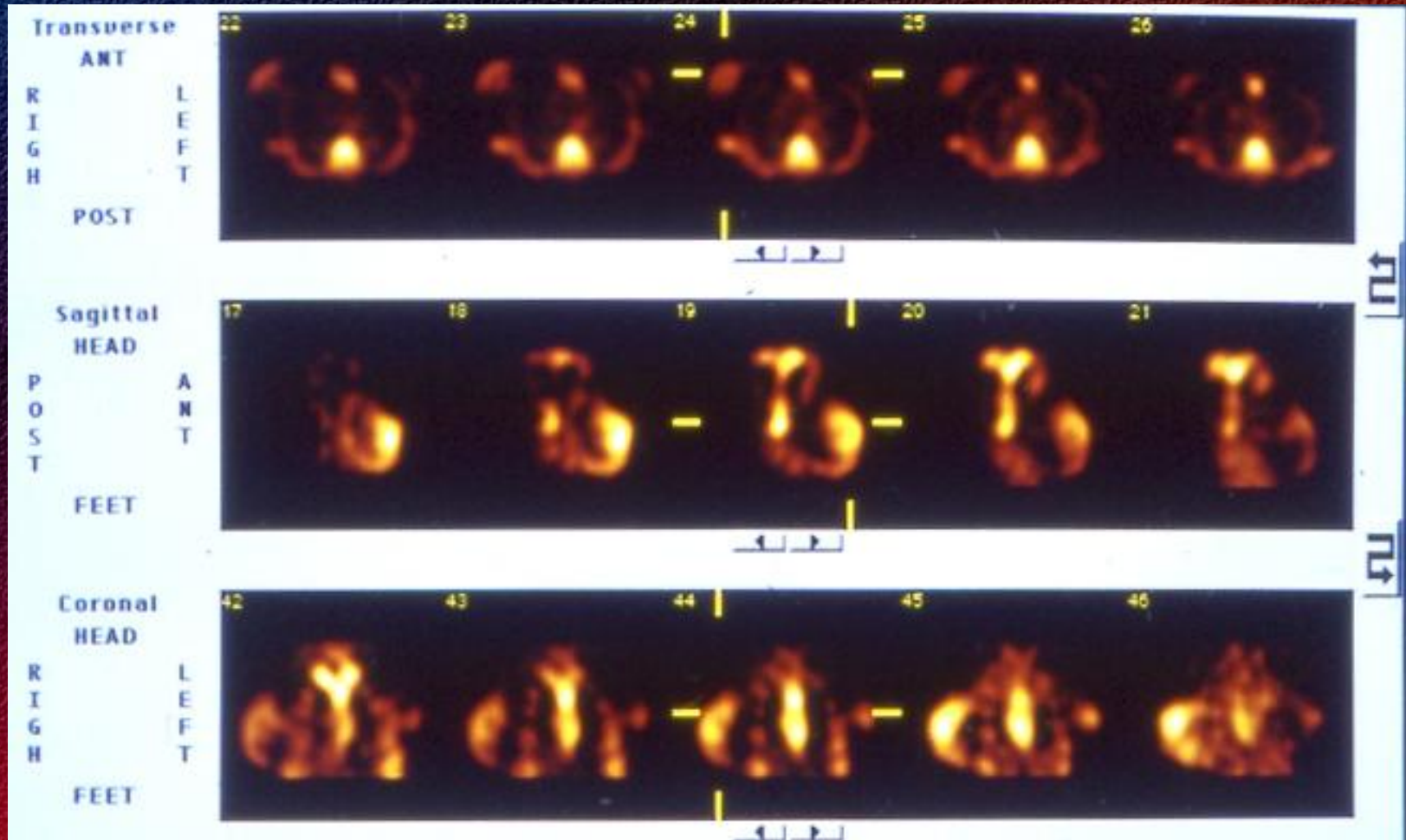


Extraosseal phosphate cumulation (meningioma)

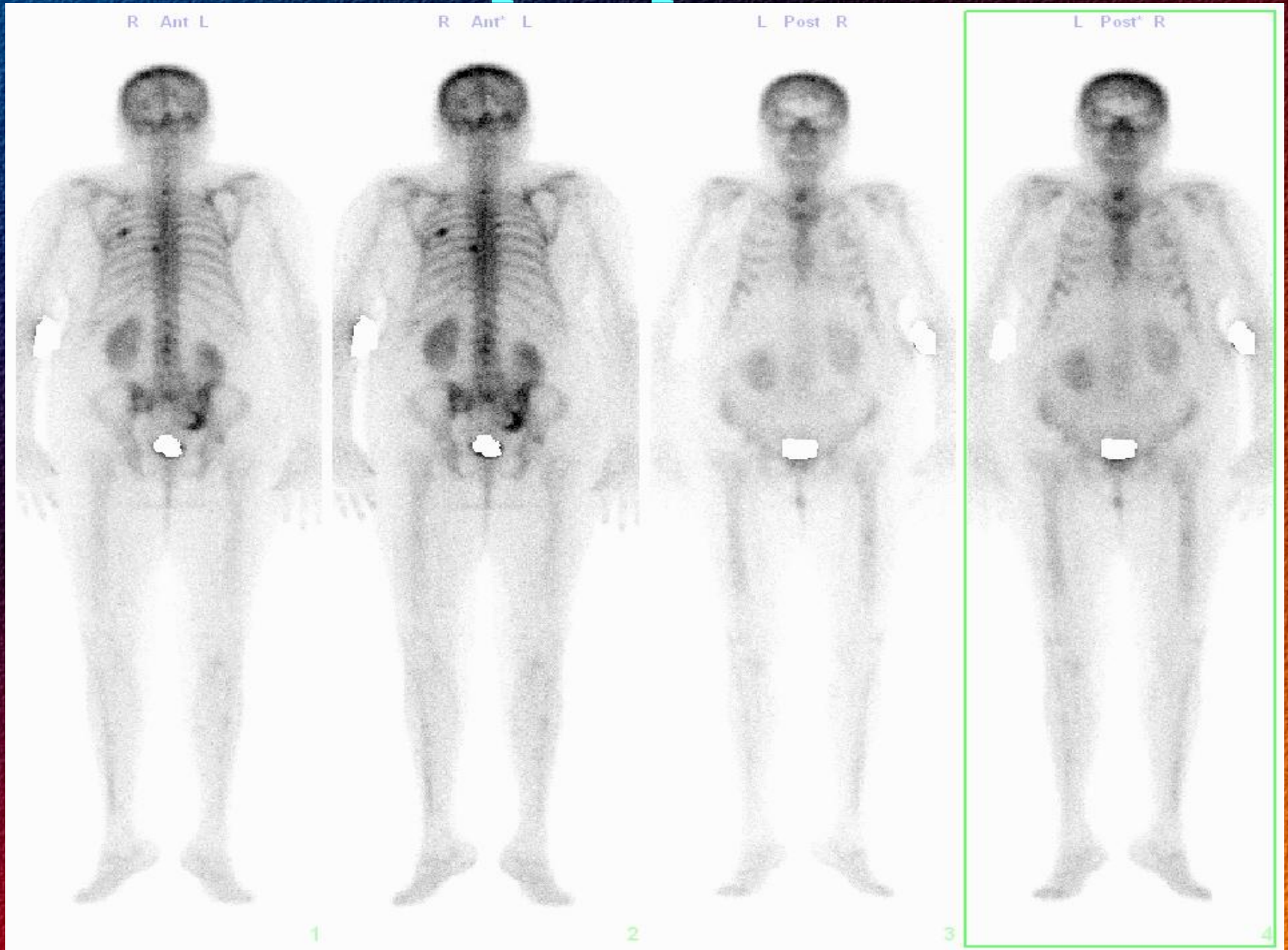
SPECT-image of the skull



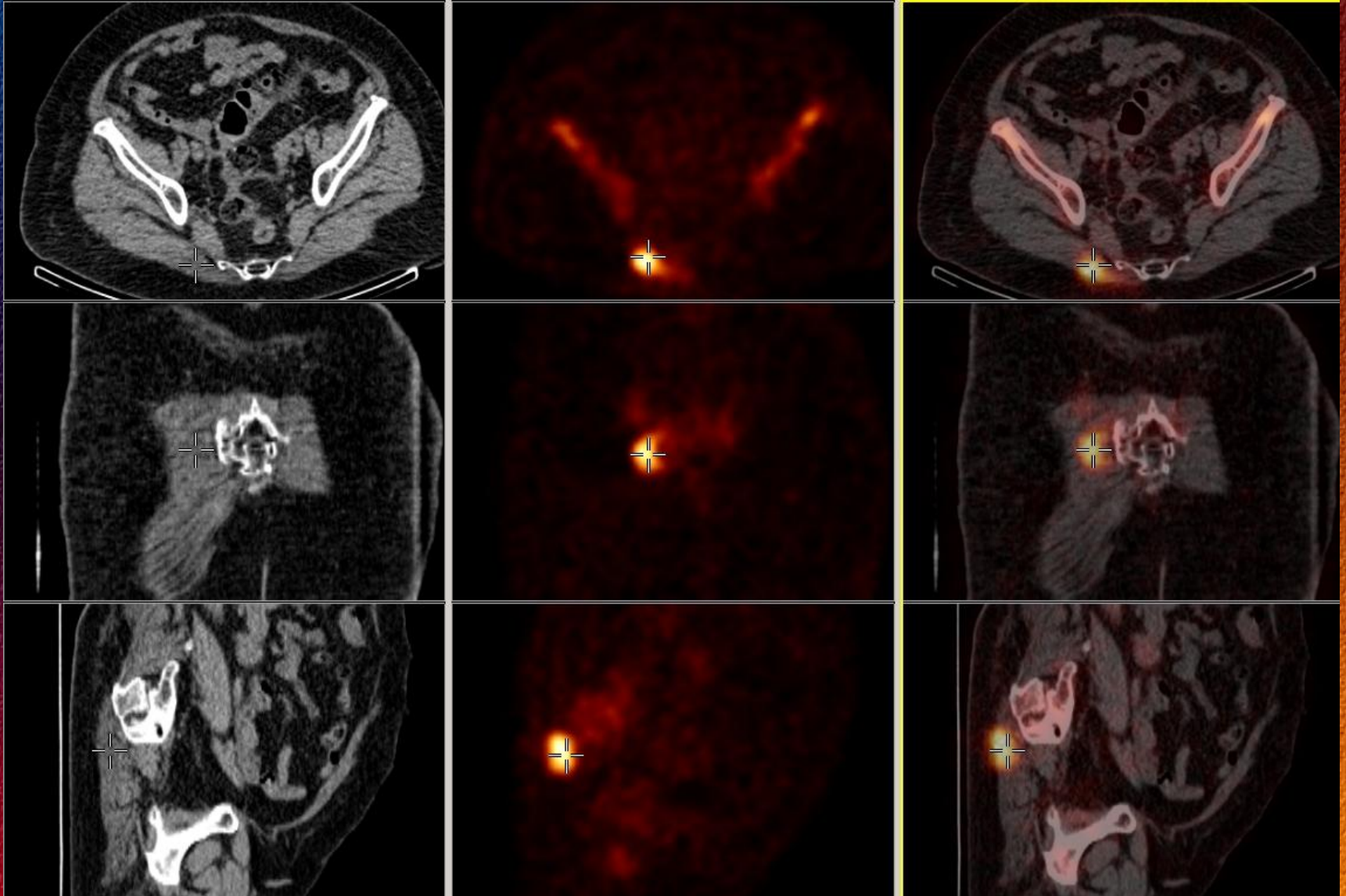
Extraosseal phosphate cumulation in breast cancer



Extraosseal phosphate cumulation



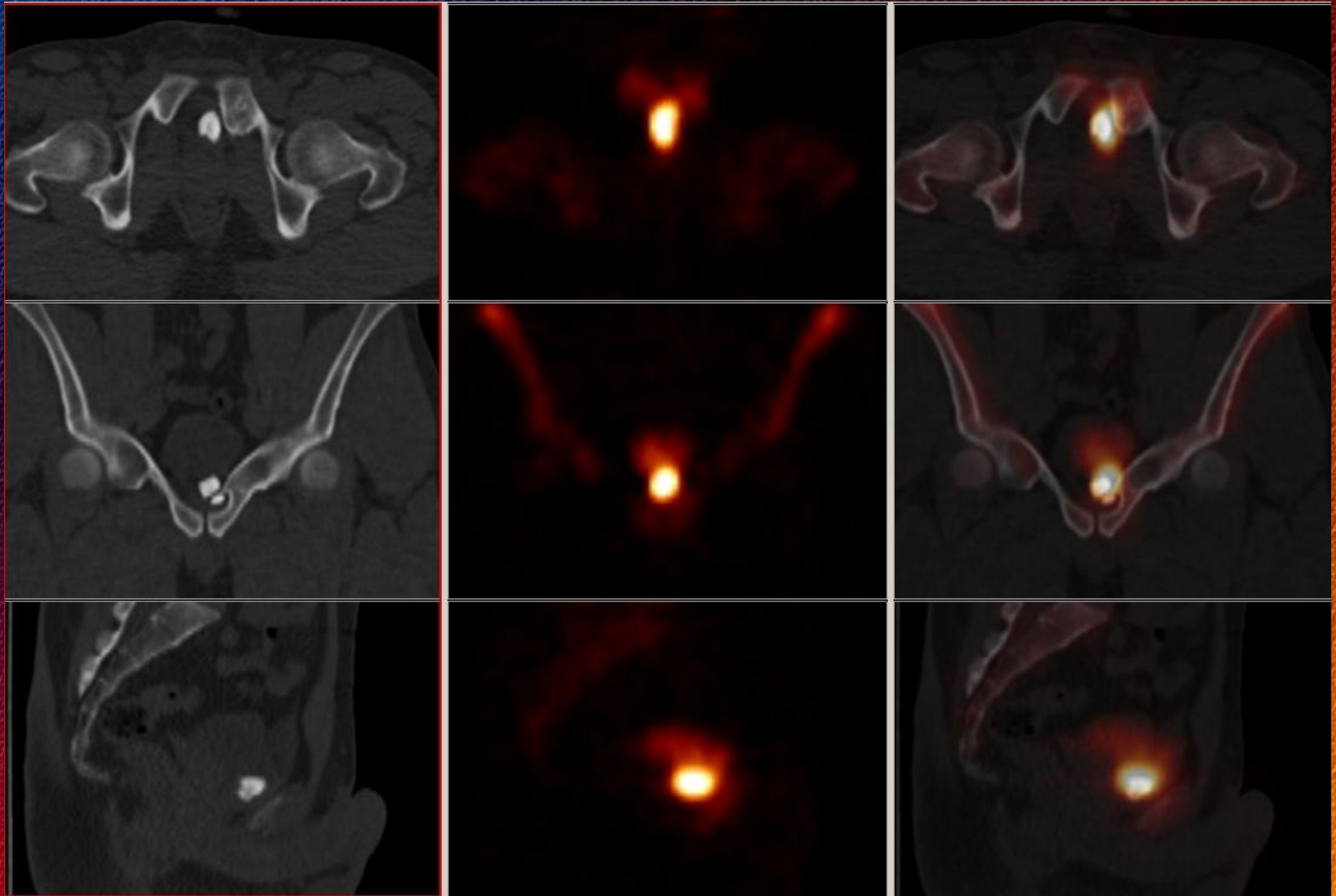
Extraosseal phosphate cumulation in m. gluteus maximus



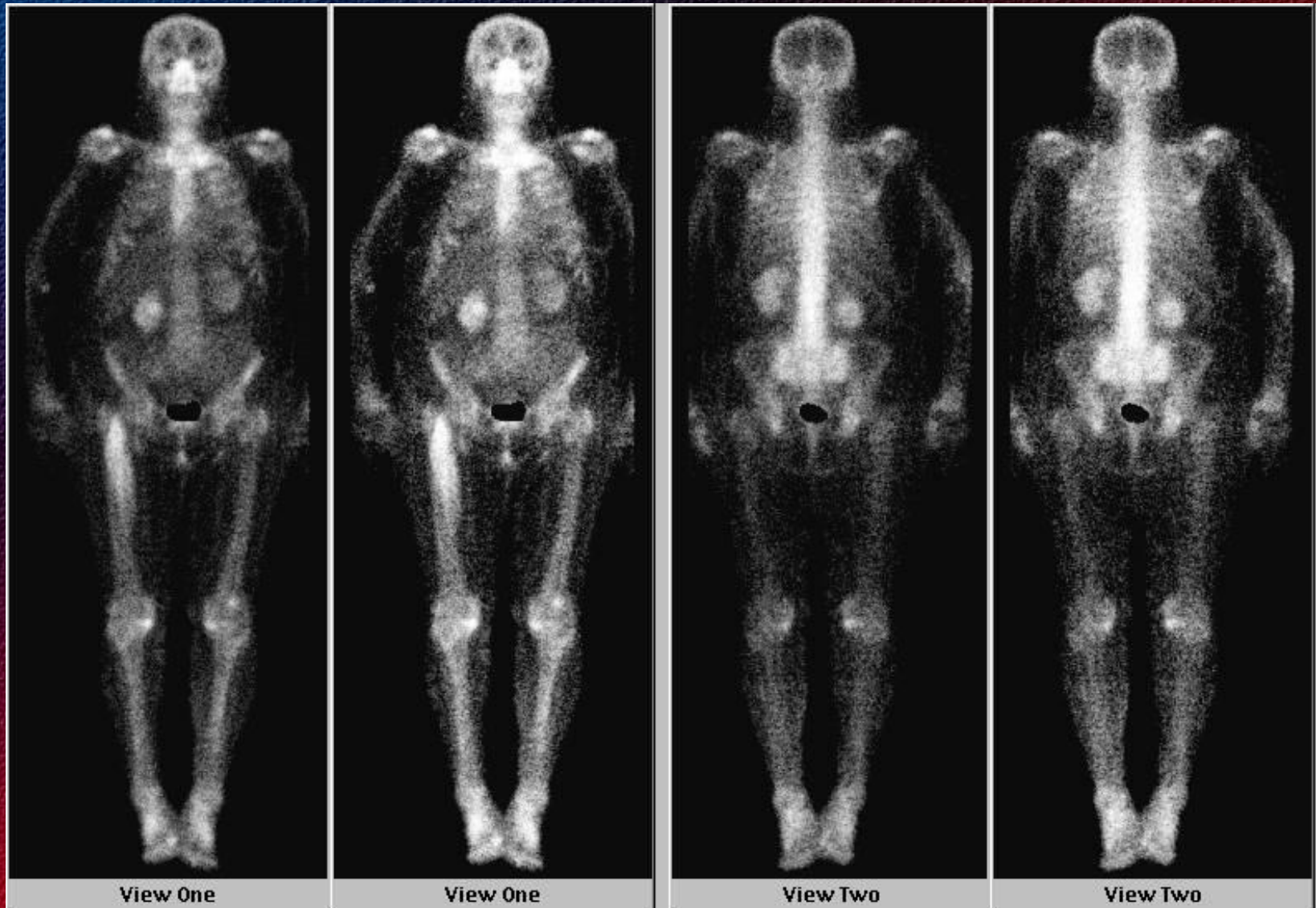
Extraosseal phosphate cumulation



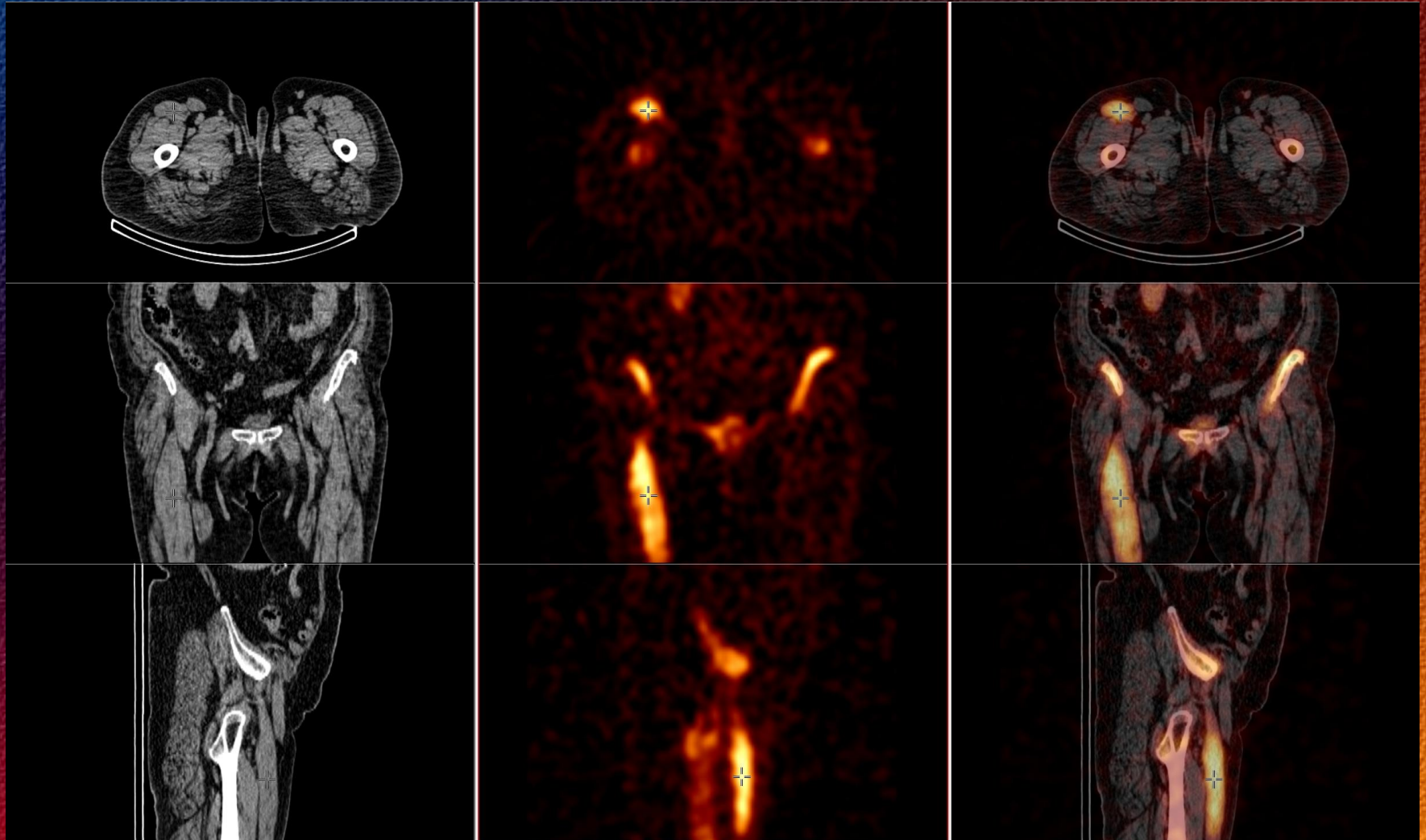
Extraosseal phosphate cumulation (tumor? haematoma? Posttraumatical cumulation?)



Extraosseal phosphate cumulation myositis ossificans

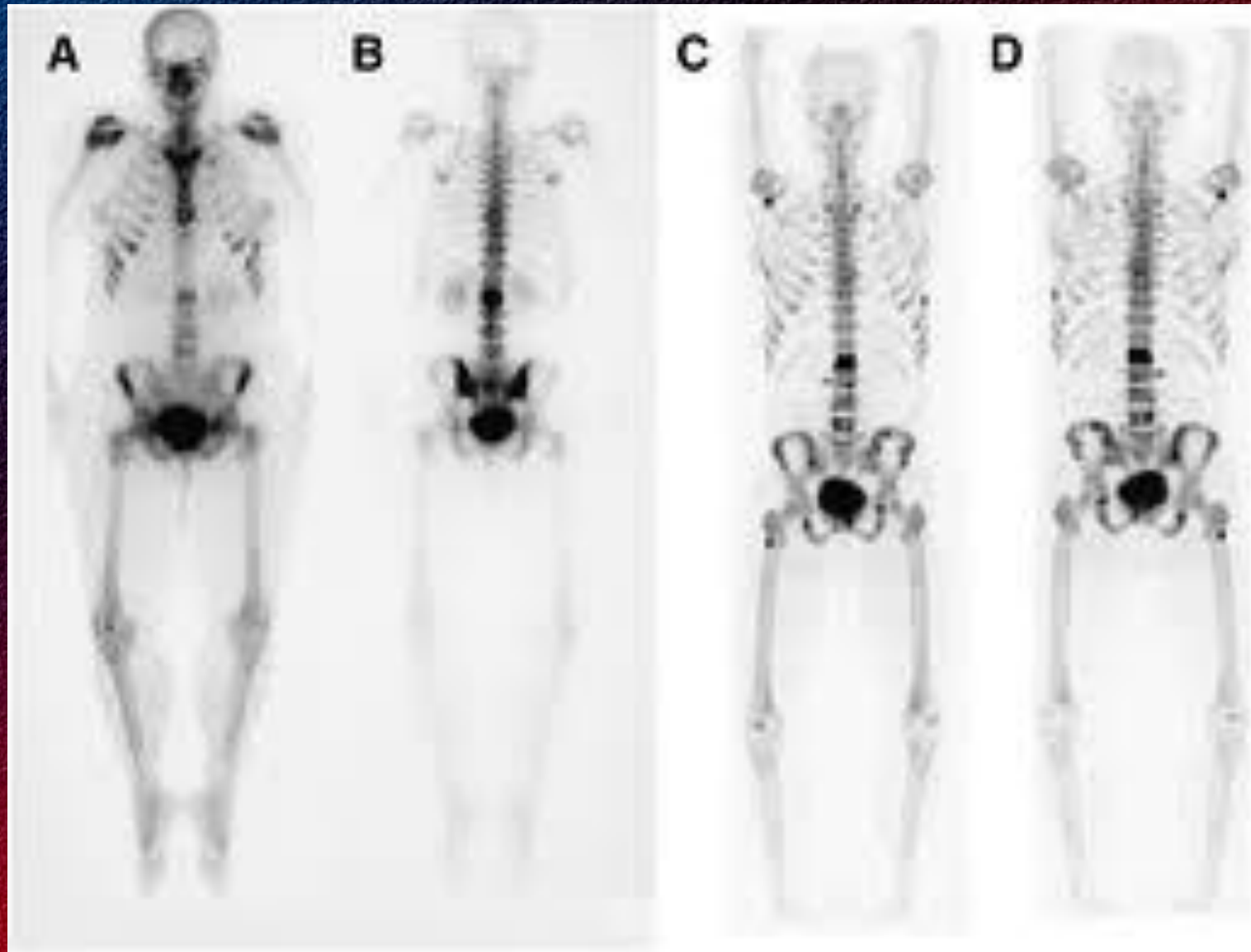


Extraosseal phosphate cumulation myositis ossificans



^{99m}Tc -MDP

F-18



Bone marrow scintigraphy

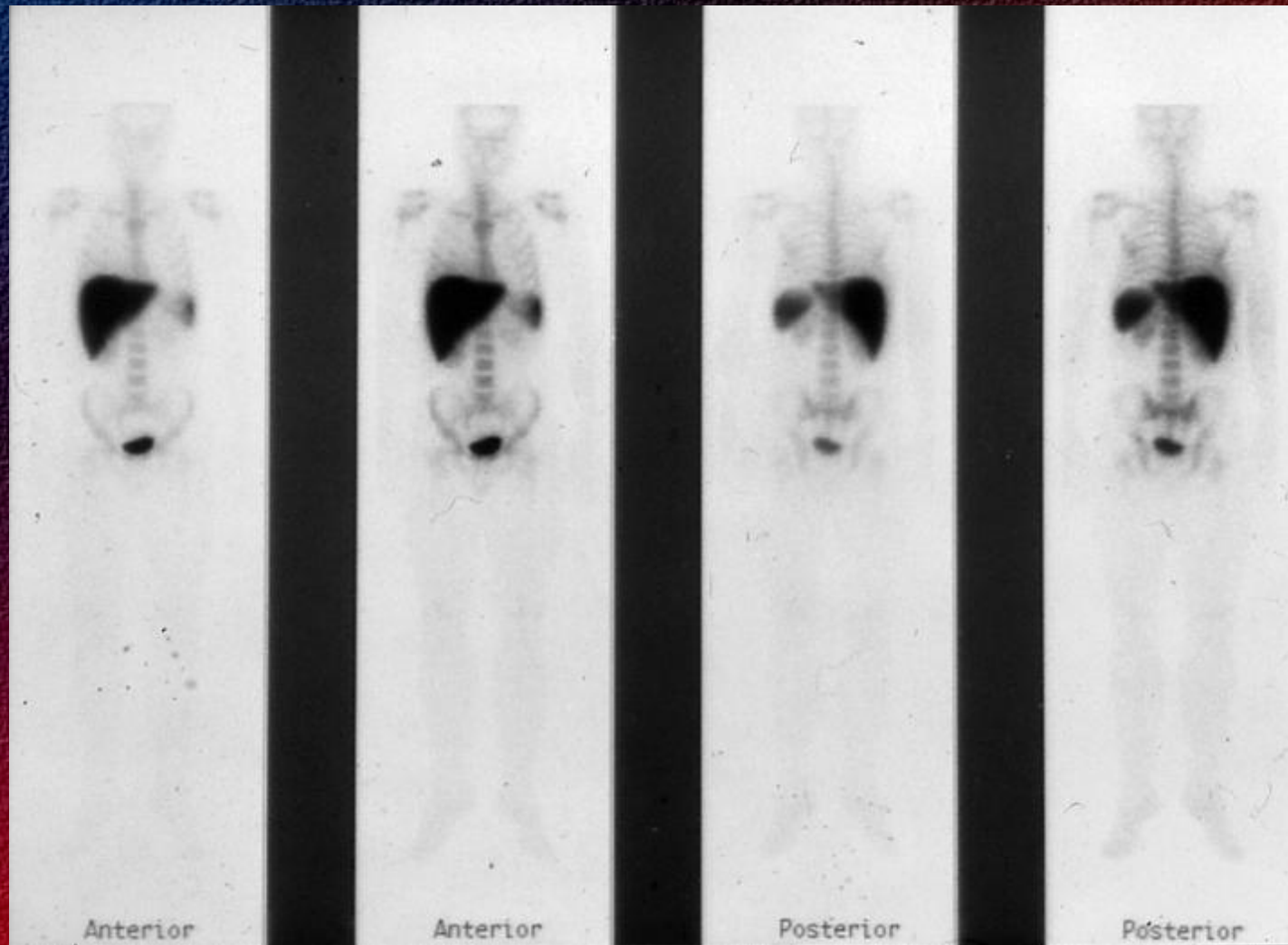
Injected subject:

- **radiocolloid (RES)**
- **antigranulocytes antibody (immunoscintigraphy)**

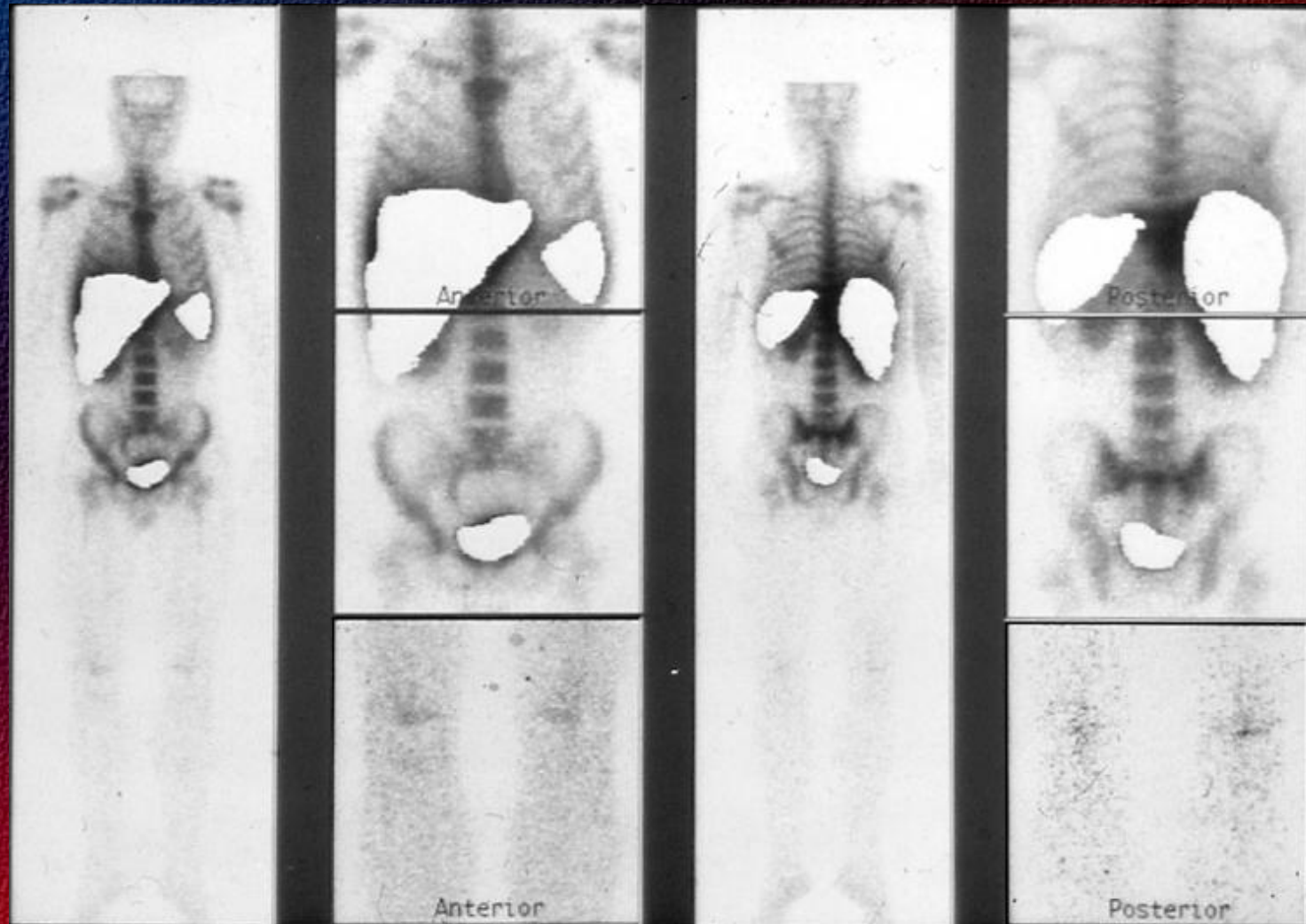
Indications:

- **haematological diseases (diagnosis, staging)**
- **Location of bone marrow biopsy**
- **Differential diagnosis (tumour, metastases)**

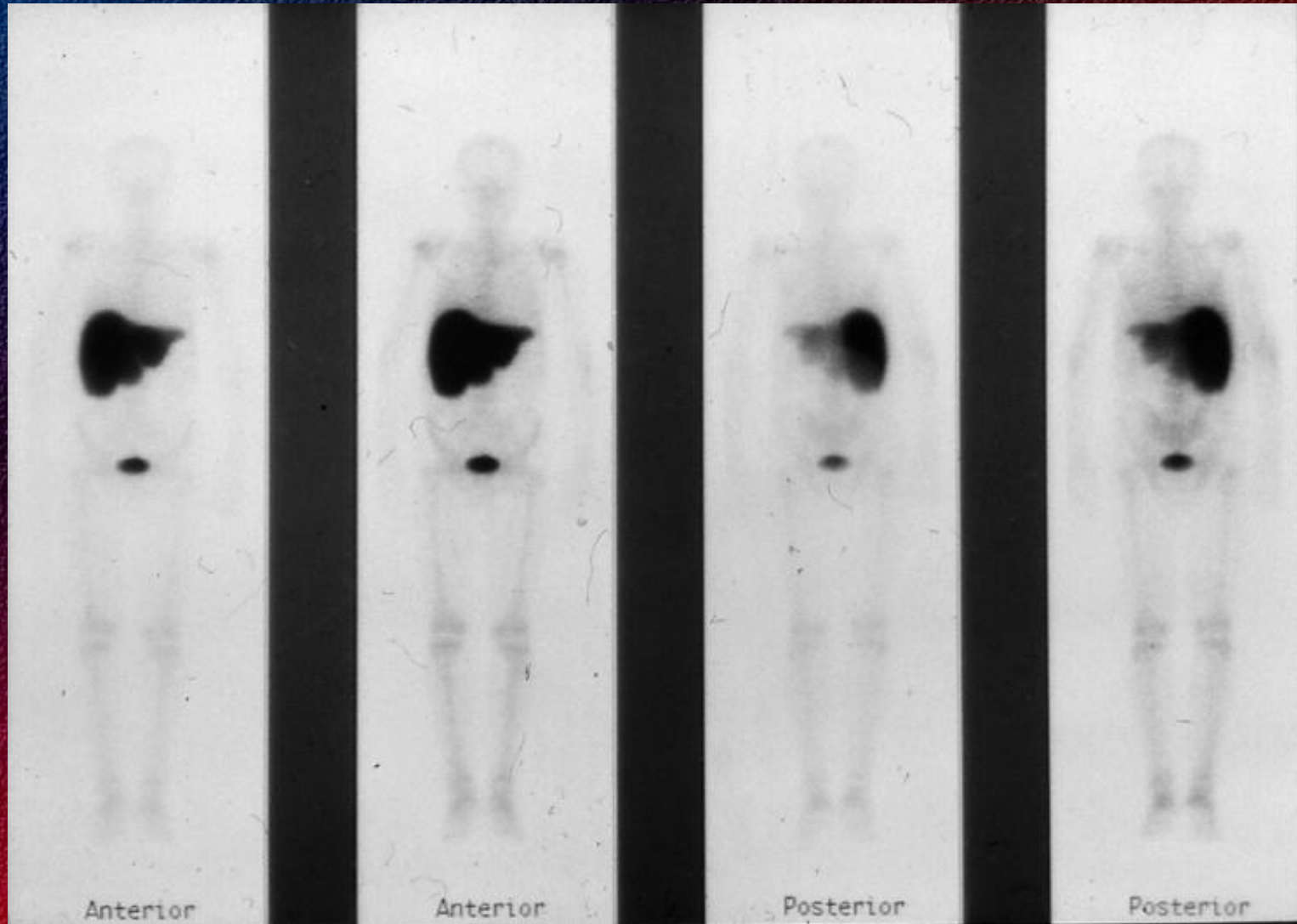
Normal bone marrow scintigraphy



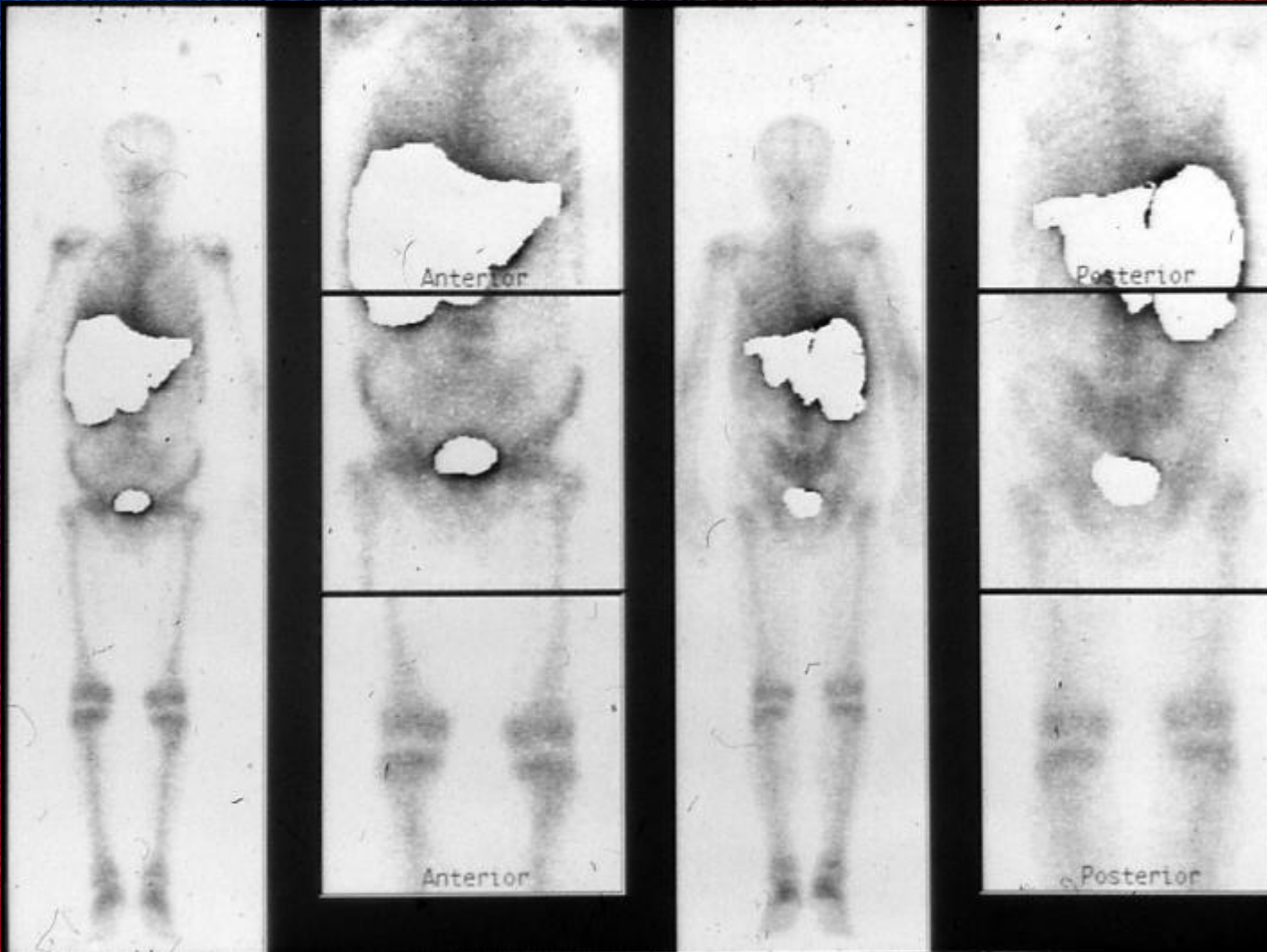
Normal bone marrow scintigraphy



Bone marrow expansion

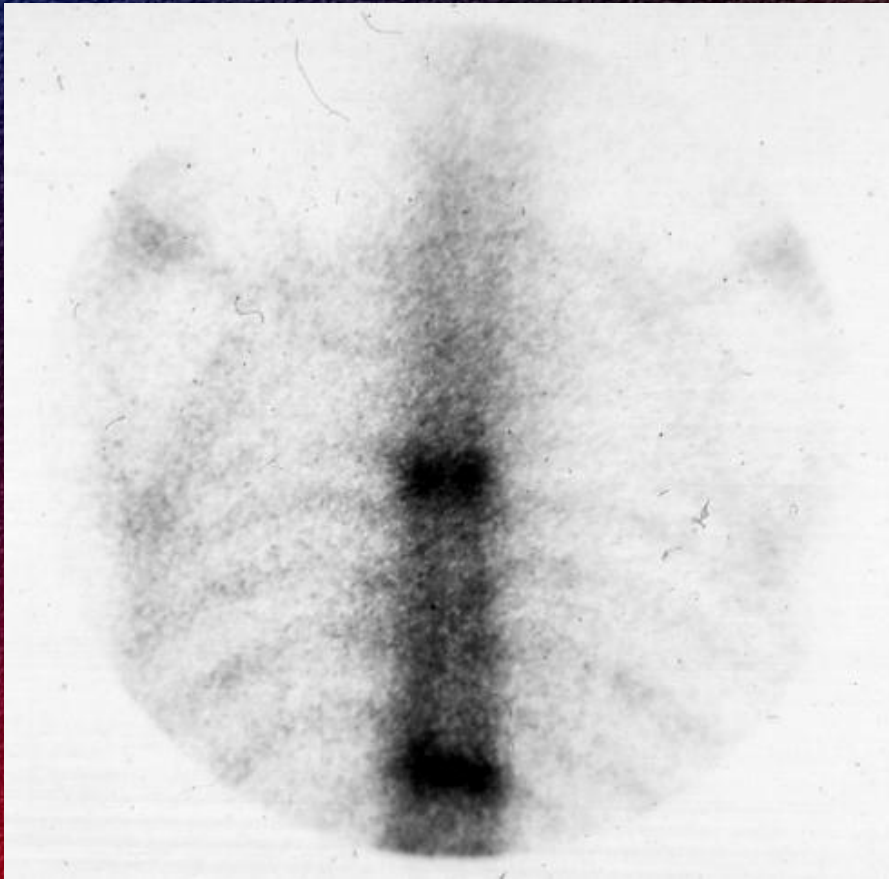


Bone marrow expansion

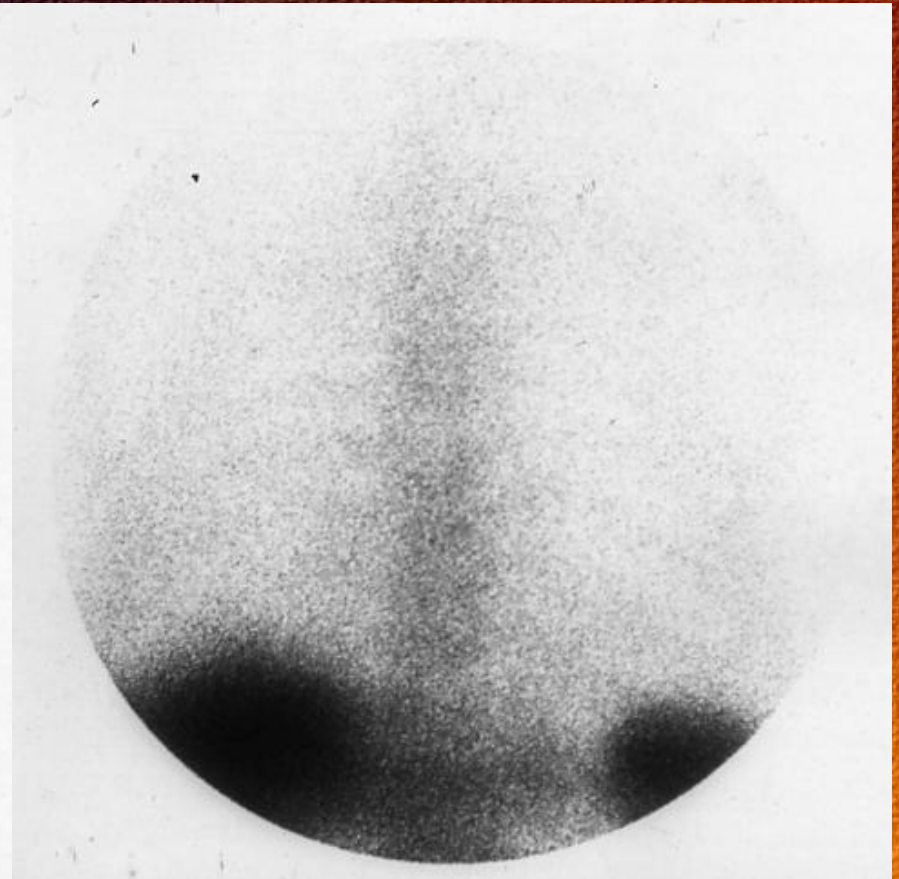


Vertebra metastases

Bone scintigraphy



Bone marrow scintigraphy



Therapy

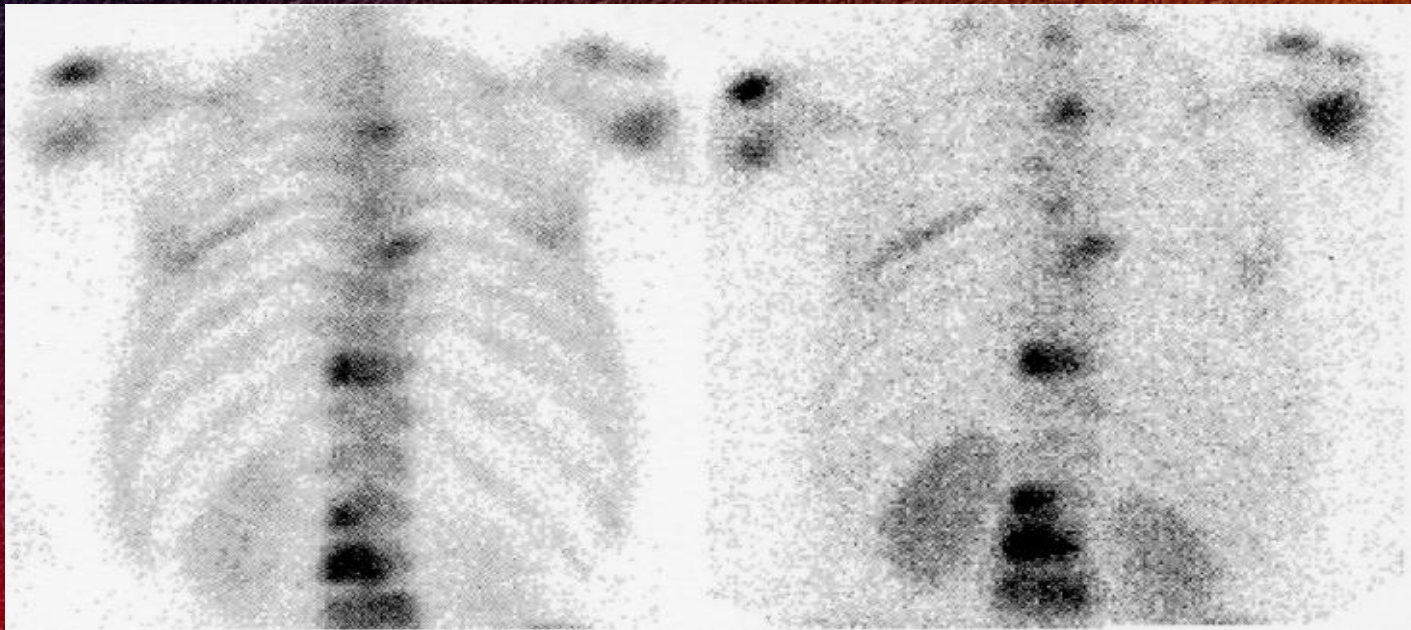
- **bone metastases**
(palliation, systemic therapy)
- **therapy of the joints**
(radio-synovectomy, local therapy)

Palliation of bone pain

(the therapeutic principle is the same as in the diagnostic)

^{99m}Tc -MDP

^{186}Re -HEDP



Radiopharmaceuticals for palliative bone therapy

Radionuclide	89-Sr	90-Y	186-Re	153-Sm
Half life (days)	50,5	2,675	3,77	1,95
E max (β) (MeV)	1,46	2,25	1,07	0,81
Max. range in tissue (mm)	8	12	5	3
γ -energia (Kev)	-	-	137	103
Pharmaceutical	klorid	EDTMP	HEDP	EDTMP
Product	Metastron	Multibone	Osteopal-R Diphoter-R	Multibone
Administered activity (MBq)	150	400	1300-2600	1300
Therapeutic effect (months)	6-9	3-4	3-4	3-4

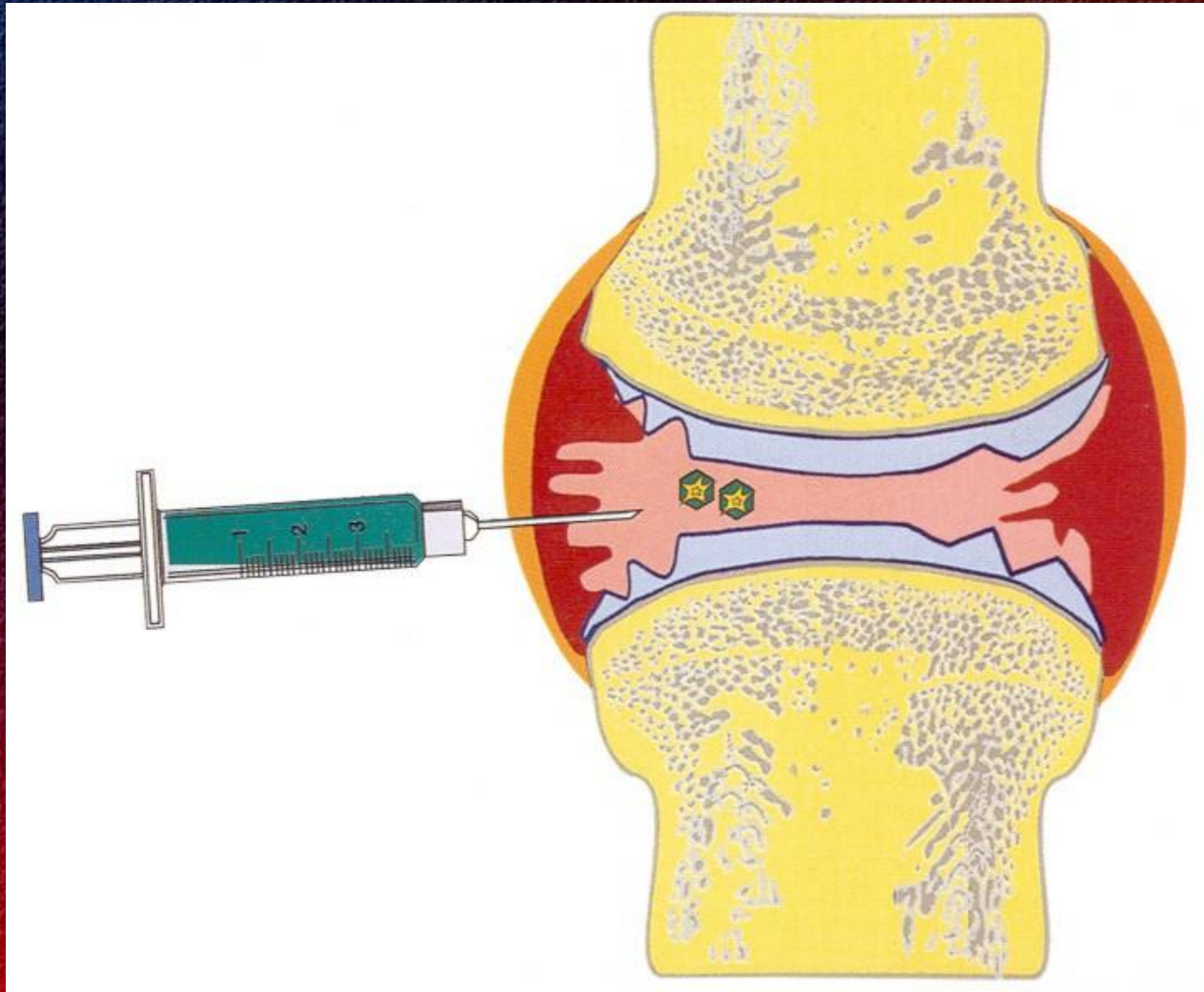
Therapy of the joints (radio-synovectomy) I.

- **Local therapy: directly in the joints**
- **Stops inflammation and pain**
- **Prevents the deformation of the joints**
- **Effective combined with long- term systemic therapy**

Therapy of the joints (radio-synovectomy) II.

- **Indication: arthritis**
- **Radiopharmaceuticals: β -emitter isotopes (colloids)**
- **Important:**
 - the accurate injection (x-ray-control!)
 - homogeneous distribution in the synovial liquid (immobilisation for 72 hours !)
- **The synovial cells fagocytate the radioaktiv colloid**

Method of radio-synovectomy



Therapy of the joints (radio-synovectomy) II.

- **Indication: arthritis**
- **Radiopharmaceuticals: β -emitter isotopes**
- **Important:**
 - the accurate injection (x-ray-control!)
 - homogeneous distribution in the synovial liquid (immobilisation for 72 hours !)
- **The synovial cells fagocytate the radioaktiv colloid**

Radiopharmaceuticals used for radio-synovectomy

	Yttrium-90	Rhenium-186	Erbium-169
T $\frac{1}{2}$:	2.7 nap	3.7 nap	9.5 nap
Radiation:	β	β +γ	β
Beta energy	2.26 MeV	0.98 MeV	0.34 MeV
Max. range in tissue	11.0 mm	3.7 mm	1.0 mm
Treated joint:	knee	shoulder, elbow, wrist, hip, ankle	small joints of hands and feet

Synovitis and arthrosis in the left knee

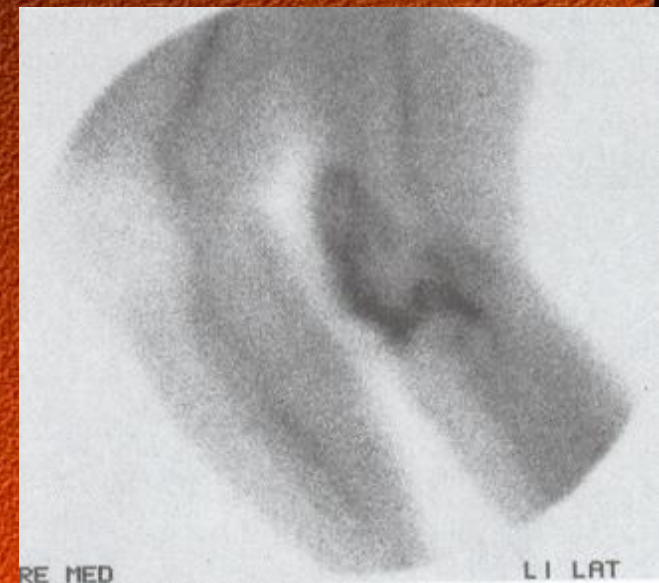
blood-pool scans



Anterior



right lateral



left lateral

Polyarthrosis in the small joints of both hands

**blood-pool
scan**

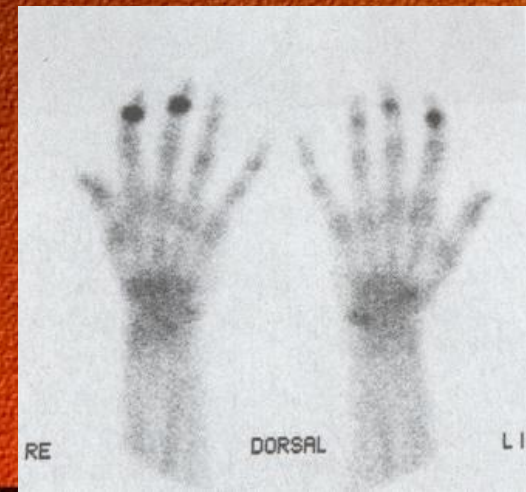


Ventral projection



Dorsal projection

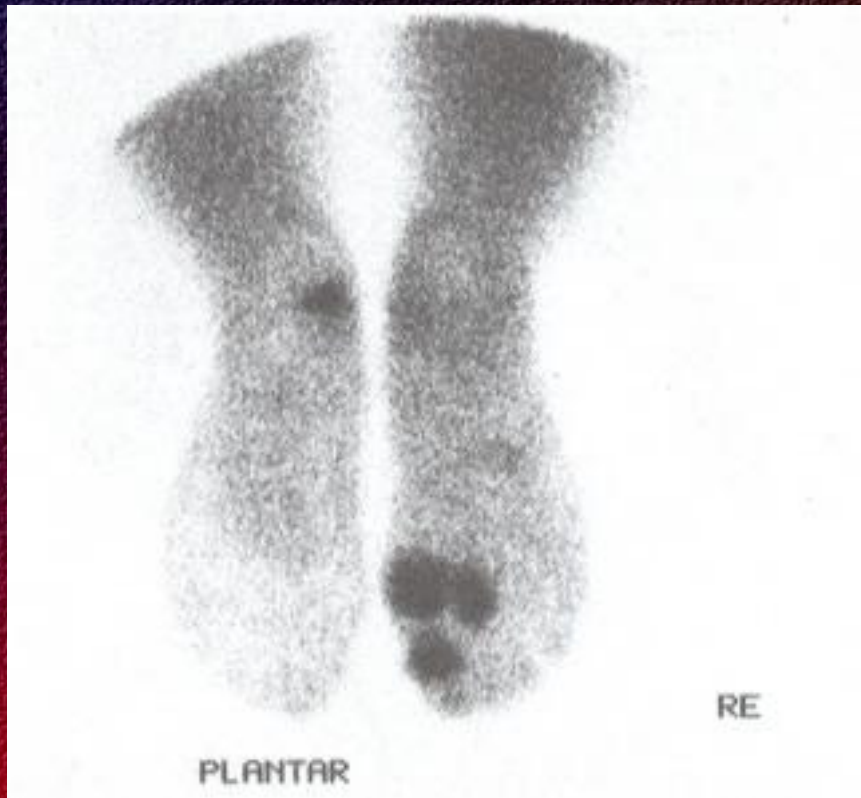
Bone scan



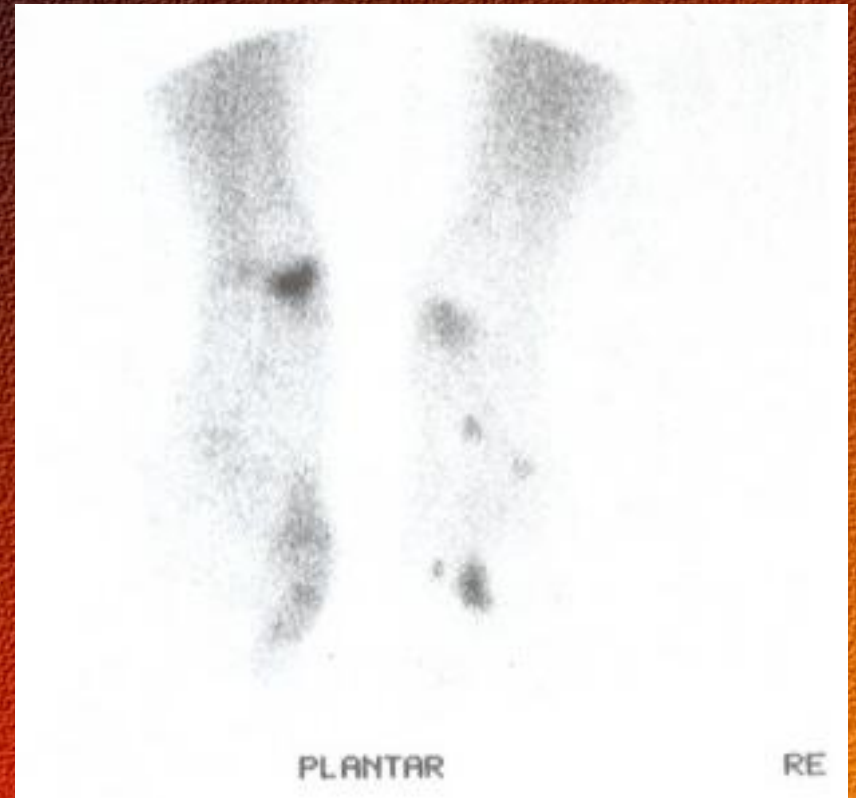
Rheumatoid arthritis in the small joints of feet

blood-pool scan

Before therapy



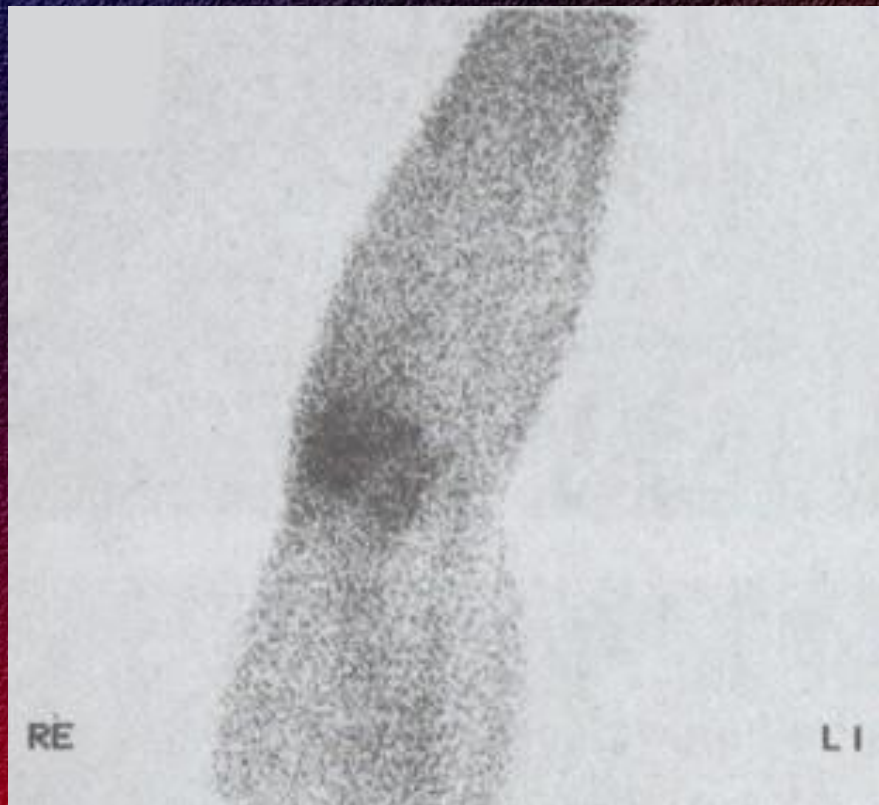
after therapy, 4 month later



Synovitis in the right elbow

Blood-pool scan

before therapy



after therapy, 7 month later



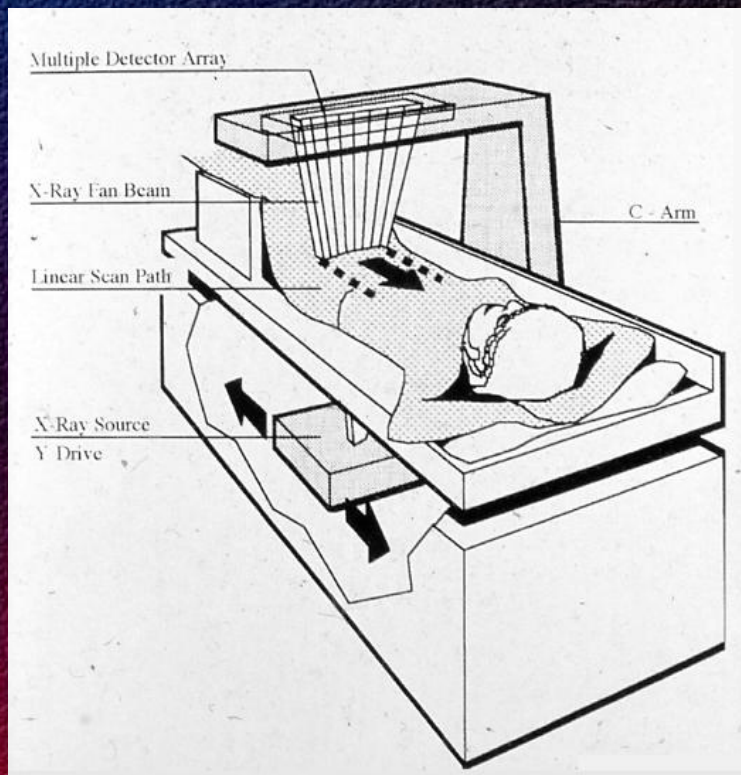
Therapy of the joints (radio-synovectomy) II.

- **Contraindications:**
 - **absolute: pregnancy, breast feeding**
 - **relative:**
 - children and adolescent**
 - unstable joint**
 - periarticular sepsis**

Bone mass measurement (measuring of bone mineral density)

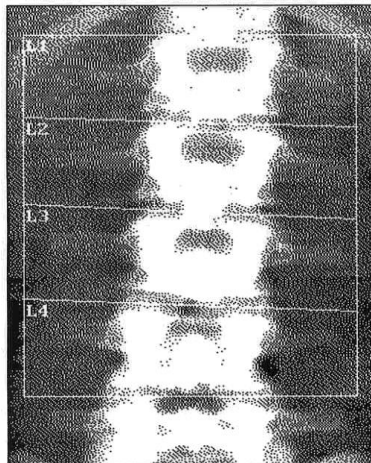
- **Conventional methods**
 - X-ray
 - Morphometric x-ray
- **Photonabsorptiometric methods**
 - SPA, DPA, *DEXA*
- **Quantitativ US (Broadband ultrasound attenuation (BUA) and speed of sound (SOS))**
- **Quantitativ CT (QCT)**
- **Quantitativ MR (QMR)**

DEXA



Pecsi Diagnosztikai Központ

k = 1.238 d0 = 118.6(1.000H) 6.208



30.Aug.1999 09:20 [113 x 142]
Hologic QDR-2000 (S/N 2327)
Array Spine Medium V4.66A:1

M0830990B Mon 30.Aug.1999 09:11
Name:
Comment: dr. Bodis Megyei Szul.
I.D.: 2581215 Sex: F
S.S.#: - - Ethnic: W
ZIPCode: Height: 164.00 cm
Scan Code: W Weight: 64.00 kg
BirthDate: 15.Dec.58 Age: 40
Physician: DR. SCHMIDT
Image not for diagnostic use

TOTAL BMD CV FOR L1 - L4 1.0%

C.F. 0.975 0.969 1.000

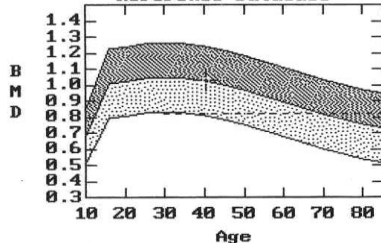
Region	Est.Area (cm ²)	Est.BMC (grams)	BMD (gms/cm ²)
L1	13.81	12.56	0.909
L2	14.65	14.75	1.007
L3	15.81	17.18	1.087
L4	17.20	18.45	1.072
TOTAL	61.48	62.94	1.024



Lumbar spine

Pecsi Diagnosztikai Központ

A Lumbar Spine
Reference Database *



BMD(L1-L4) = 1.024 g/cm²

Region	BMD	T(30.0)	Z
L1	0.909	-0.14 98%	+0.07 101%
L2	1.007	-0.19 98%	+0.04 100%
L3	1.087	+0.02 100%	+0.27 103%
L4	1.072	-0.40 96%	-0.14 99%
L1-L4	1.024	-0.21 98%	+0.03 100%

♦ Age and sex matched

T = peak bone mass

Z = age matched

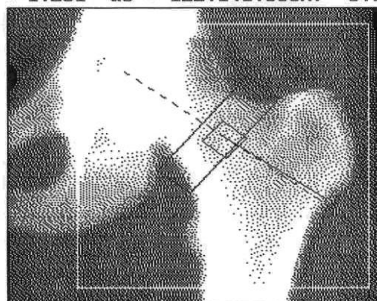
TK 04 Nov 91

M0830990B Mon 30.Aug.1999 09:11
Name:
Comment: dr. Bodis Megyei Szul.
I.D.: 2581215 Sex: F
S.S.#: - - Ethnic: W
ZIPCode: Height: 164.00 cm
Scan Code: W Weight: 64.00 kg
BirthDate: 15.Dec.58 Age: 40
Physician: DR. SCHMIDT



Pecsi Diagnosztikai Központ

k = 1.251 d0 = 122.1(1.000H) 5.904



30.Aug.1999 12:20 [99 x 108]
Hologic QDR-2000 (S/N 2327)
Array Left Hip Medium V4.66A:1

M08309911 Mon 30.Aug.1999 12:15

Name:

Comment: dr. Bodis Megyei Szul.

I.D.: 2581215 Sex: F

S.S.#: - - Ethnic: W

ZIPCode: Height: 164.00 cm

Scan Code: W Weight: 64.00 kg

BirthDate: 15.Dec.58 Age: 40

Physician: DR. SCHMIDT

Image not for diagnostic use

TOTAL BMD CV 1.0%

C.F. 0.975 0.969 1.000

Region	Est.Area (cm ²)	Est.BMC (grams)	BMD (gms/cm ²)
--------	--------------------------------	--------------------	-------------------------------

Neck	5.32	4.42	0.830
------	------	------	-------

Troch	11.42	7.77	0.680
-------	-------	------	-------

Inter	17.45	20.62	1.182
-------	-------	-------	-------

TOTAL	34.19	32.80	0.959
-------	-------	-------	-------

Ward's	1.24	1.05	0.848
--------	------	------	-------

Midline (100,120)-(168, 66)

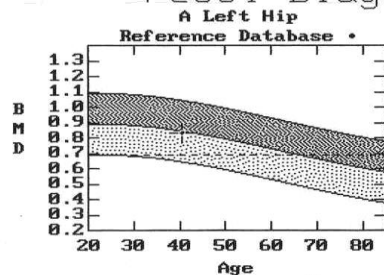
Neck -49 x 15 at [24, 10]

Troch 4 x 42 at [0, 0]

Ward's -11 x 11 at [5, 5]

HOLOGIC

Pecsi Diagnosztikai Központ



BMD(Neck[L1]) = 0.830 g/cm²

Region	BMD	T	Z
Neck	0.830	-0.64 93% (22.0)	-0.16 98%
Troch	0.680	-0.46 94% (30.0)	-0.30 96%
Inter	1.182	+0.24 103% (29.0)	+0.40 105%
TOTAL	0.959	-0.13 98% (28.0)	+0.06 101%
Ward's	0.848	+0.47 107% (20.0)	+1.46 123%

♦ Age and sex matched

T = peak bone mass

Z = age matched

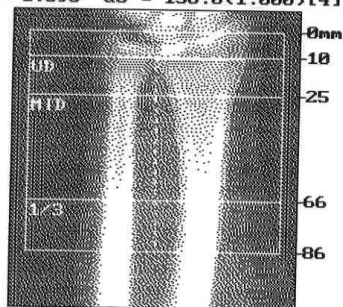
TK 25 Oct 91

HOLOGIC

Hip region

Pecsi Diagnosztikai Központ

k = 1.396 d0 = 156.0(1.000)[4]



30.Aug.1999 08:28 [172 x 87]
Hologic QDR-2000 (S/N 2327)
Left Forearm V5.70

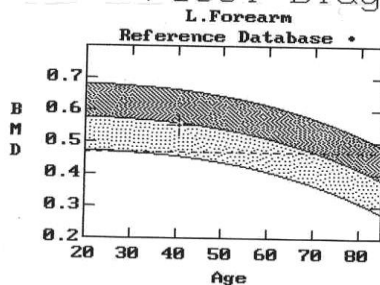
M08309906 Mon 30.Aug.1999 08:19
Name:
Comment: dr. Bodis Megyei Szul.
I.D.: 2581215 Sex: F
S.S.#: - Ethnic: W
ZIPCode: Height: 164.00 cm
Scan Code: W Weight: 64.00 kg
BirthDate: 15.Dec.58 Age: 40
Physician: DR. SCHMIDT
Forearm Length: 23.0 cm
Image not for diagnostic use

TOTAL BMD CV IS LESS THAN 1.0%
C.F. 0.997 1.046 1.000

RADIUS	Area (cm2)	BMC (grams)	BMD (gms/cm2)
UD	3.85	1.57	0.408
MID	6.32	3.66	0.578
1/3	2.88	1.96	0.680
TOTAL	13.05	7.18	0.551

HOLOGIC

Pecsi Diagnosztikai Központ



BMD(Radius[L] TOTAL) = 0.551 g/cm²

Region	BMD	T	Z
1/3	0.680	-0.23 98% (20.0)	+0.15 101%
MID	0.578	-0.54 95% (20.0)	-0.17 98%
UD	0.408	-0.60 92% (20.0)	-0.34 95%
TOTAL	0.551	-0.52 95% (20.0)	-0.18 98%

* Age and sex matched
T = peak bone mass
Z = age matched

PS 25 Oct 91

HOLOGIC

Forearm

T and Z scores

- **The T-score is the number of standard deviations below the average for a young adult at peak bone density.**
- **The Z-score is the number of standard deviations below an average person of the same age, race and gender.**

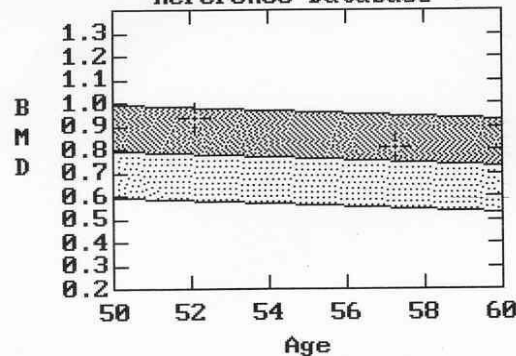
Interpretation of results according to the WHO definitions

- **Normal bone: T-score better than -1.**
- **Osteopenia: T-score between -1 and -2.5**
- **Osteoporosis: T-score less than -2.5**
- **The bone density is important because it can help to predict the risk of getting a fracture, but it is important to realize that the T-score alone does not predict fractures, and osteopenia is not a disease.**

Therapy monitoring

Pecsi Diagnosztikai Központ

A Left Hip
Reference Database *



M03310008 Fri 31.Mar.2000 08:25

Name:

Comment: dr. Sebok Judit

I.D.: 2421226 Sex: F

S.S.#: - - Ethnic: W

ZIPCode: 612 Height: 168.00 cm

Scan Code: TA Weight: 77.00 kg

BirthDate: 26.Dec.42 Age: 57

Physician: DR.SCHMIDT

Date	Age	BMD Neck	BMD Troch	BMD Inter	BMD TOTAL	BMD Ward
10 Feb 95	52.1	0.934	0.682	1.150	0.977	0.597
31 Mar 00	57.3	0.804	0.710	1.179	0.980	0.603

Region	Rate of Change/yr ±SD**	% Change ±% /yr SD
Neck	-0.0254 0.0029	-2.72 0.31
Troch	+0.0056 0.0017	+0.82 0.26
Inter	+0.0055 0.0025	+0.48 0.22
TOTAL	+0.0006 0.0027	+0.06 0.27
Ward's	+0.0012 0.0044	+0.21 0.74

**1.96xSD = 95% Confidence Interval

♦ Age and sex matched

T = peak bone mass

Z = age matched

TK 25 Oct 91



Indications for bone density measurements

Risk factors or conditions that cause osteoporosis:

Postmenopausal woman with family history of hip fractures

Medications: corticosteroids

Endocrine and metabolic (hypogonadism, hyperparathyroidism, hyperthyroidism, Cushing syndrome)

Malabsorption

Contraindication of DEXA

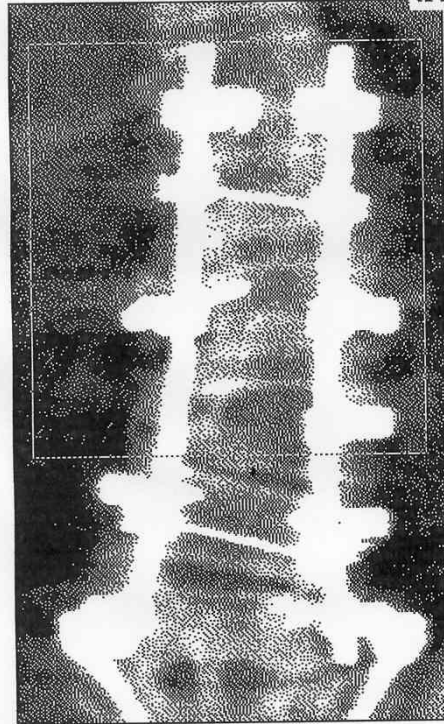
- **Absolute: pregnancy**
- **Relative:**
 - **gastrointestinal contrast or nuclear medicine test (affect the results of the measurement) (central DEXA)**
 - **extreme obesity (central DEXA)**

Conditions influence on results

- **Spondylosis, arthrosis, degenerative changing**
- **Compression fracture of vertebra**
- **Scoliosis**
- **Metal devices**

Metal implants in lumbar spine

SELECT REGION OF INTEREST
(F9 FOR HELP)

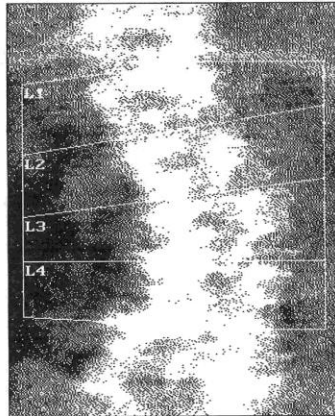


110 x 110

M02260316 Buday Santha Attilane dr Comment: Dr Blazek Marta

Pecsi Diagnosztikai Központ

k = 1.218 d0 = 109.8(1.000H) 9.218



Mar 14 09:42 2003 [113 x 122]
Hologic QDR-2000 (S/N 2327)
Array Spine Medium V4.76A:1

M0314030A Fri Mar 14 09:38 2003
Name:
Comment: Dr Kovacs Melinda
I.D.: 2310124 Sex: F
S.S.#: - - Ethnic: W
ZIPCode: Height: 160.00 cm
Scan Code: SZE Weight: 82.00 kg
BirthDate: 01/24/31 Age: 72
Physician: DR SCHMIDT
Image not for diagnostic use

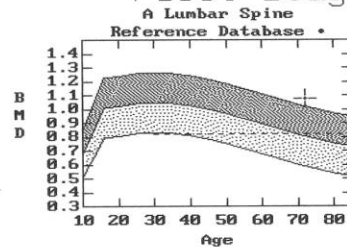
TOTAL BMD CV FOR L1 - L4 1.0%

C.F. 0.975 0.969 1.000

Region	Est.Area (cm ²)	Est.BMC (grams)	BMD (gms/cm ²)
L1	12.29	11.47	0.934
L2	13.81	13.73	0.994
L3	16.02	18.02	1.125
L4	16.00	18.93	1.183
TOTAL	58.12	62.16	1.070



Pecsi Diagnosztikai Központ



BMD(L1-L4) = 1.070 g/cm²

Region	BMD	T(30.0)	Z
L1	0.934	+0.08 101%	+2.06 132%
L2	0.994	-0.31 97%	+1.90 127%
L3	1.125	+0.37 104%	+2.69 136%
L4	1.183	+0.61 106%	+3.00 139%
L1-L4	1.070	+0.20 102%	+2.44 133%

* Age and sex matched

T = peak bone mass

Z = age matched

TK 11/04/91

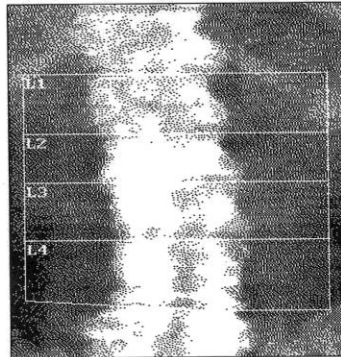
M0314030A Fri Mar 14 09:38 2003
Name:
Comment: Dr Kovacs Melinda
I.D.: 2310124 Sex: F
S.S.#: - - Ethnic: W
ZIPCode: Height: 160.00 cm
Scan Code: SZE Weight: 82.00 kg
BirthDate: 01/24/31 Age: 72
Physician: DR SCHMIDT



Degenerative
changing an
deformity in
the lumbar spine

Pecsi Diagnosztikai Központ

k = 1.234 d0 = 115.9(1.000H) 7.494



03.Nov.1999 11:51 [113 x 108]
Hologic QDR-2000 (S/N 2327)
Array Spine Medium V4.66A:1

M1103991F Wed 03.Nov.1999 11:46
Name:
Comment: dr.Magdics
I.D.: 2230409 Sex: F
S.S.#: - Ethnic: U
ZIPCode: Height: 153.00 cm
Scan Code: SZE Weight: 73.00 kg
BirthDate: 09.Apr.23 Age: 76
Physician: DR.SCHMIDT
Image not for diagnostic use

TOTAL BMD CV FOR L1 - L4 1.0%

C.F. 0.975 0.969 1.000

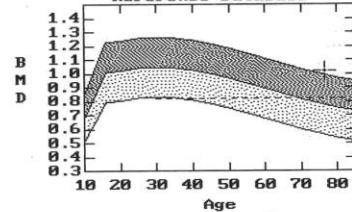
Region	Est.Area (cm ²)	Est.BMC (grams)	BMD (gms/cm ²)
L1	11.14	8.06	0.724
L2	9.39	11.05	1.176
L3	11.39	12.52	1.100
L4	13.65	14.59	1.069
TOTAL	45.57	46.22	1.014

HOLOGIC

compression
fractures in the
lumbar spine

Pecsi Diagnosztikai Központ

A Lumbar Spine
Reference Database *



BMD(L1-L4) = 1.014 g/cm²

Region	BMD	T(30.0)	Z
L1	0.724	-1.83 78%	+0.38 106%
L2	1.176	+1.35 114%	+3.80 155%
L3	1.100	+0.15 101%	+2.73 138%
L4	1.069	-0.43 96%	+2.23 130%
L1-L4	1.014	-0.30 97%	+2.19 131%

♦ Age and sex matched

T = peak bone mass

Z = age matched

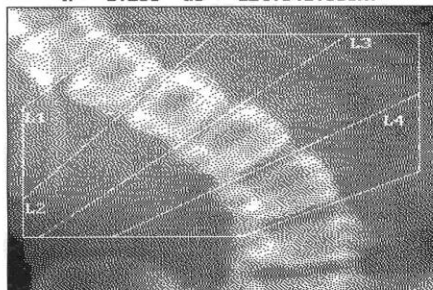
TK 04 Nov 91

M1103991F Wed 03.Nov.1999 11:46
Name:
Comment: dr.Magdics
I.D.: 2230409 Sex: F
S.S.#: - Ethnic: U
ZIPCode: Height: 153.00 cm
Scan Code: SZE Weight: 73.00 kg
BirthDate: 09.Apr.23 Age: 76
Physician: DR.SCHMIDT

HOLOGIC

Pecsi Diagnosztikai Központ

k = 1.258 d0 = 124.6(1.000H)



Jun 20 08:27 2001 [146 x 92]
Hologic QDR-2000 (S/N 2327)
Lumbar Spine V4.76

M06190119 Tue Jun 19 13:01 2001
Name:
Comment: Dr Gazso Imre
I.D.: 2890723 Sex: F
S.S.#: - Ethnic: W
ZIPCode: Height: 127.00 cm
Scan Code: SZE Weight: 20.00 kg
BirthDate: 07/23/89 Age: 11
Physician: DR ZAMBO
Image not for diagnostic use

TOTAL BMD CV FOR L1 - L4 1.0%

C.F. 0.997 1.046 1.000

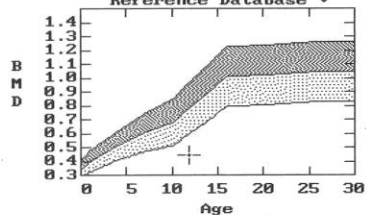
Region	Area (cm ²)	BMC (grams)	BMD (gms/cm ²)
L1	7.32	3.74	0.512
L2	8.03	3.93	0.490
L3	8.79	3.46	0.393
L4	8.87	3.36	0.379
TOTAL	33.02	14.49	0.439



Pecsi Diagnosztikai Központ

Lumbar Spine

Reference Database *



BMD(L1-L4) = 0.439 g/cm²

Region	BMD	T(30.0)	Z
L1	0.512	-3.76 55%	
L2	0.490	-4.89 48%	
L3	0.393	-6.28 36%	
L4	0.379	-6.70 34%	
L1-L4	0.439	-5.53 42%	-3.62 56%

* Age and sex matched

T = peak bone mass

Z = age matched

TK 11/04/91

M06190119 Tue Jun 19 13:01 2001
Name:
Comment: Dr Gazso Imre
I.D.: 2890723 Sex: F
S.S.#: - Ethnic: W
ZIPCode: Height: 127.00 cm
Scan Code: SZE Weight: 20.00 kg
BirthDate: 07/23/89 Age: 11
Physician: DR ZAMBO



scoliosis

Thanks for your
attention!