Terapie těžké osteoporózy deriváty parathormonu

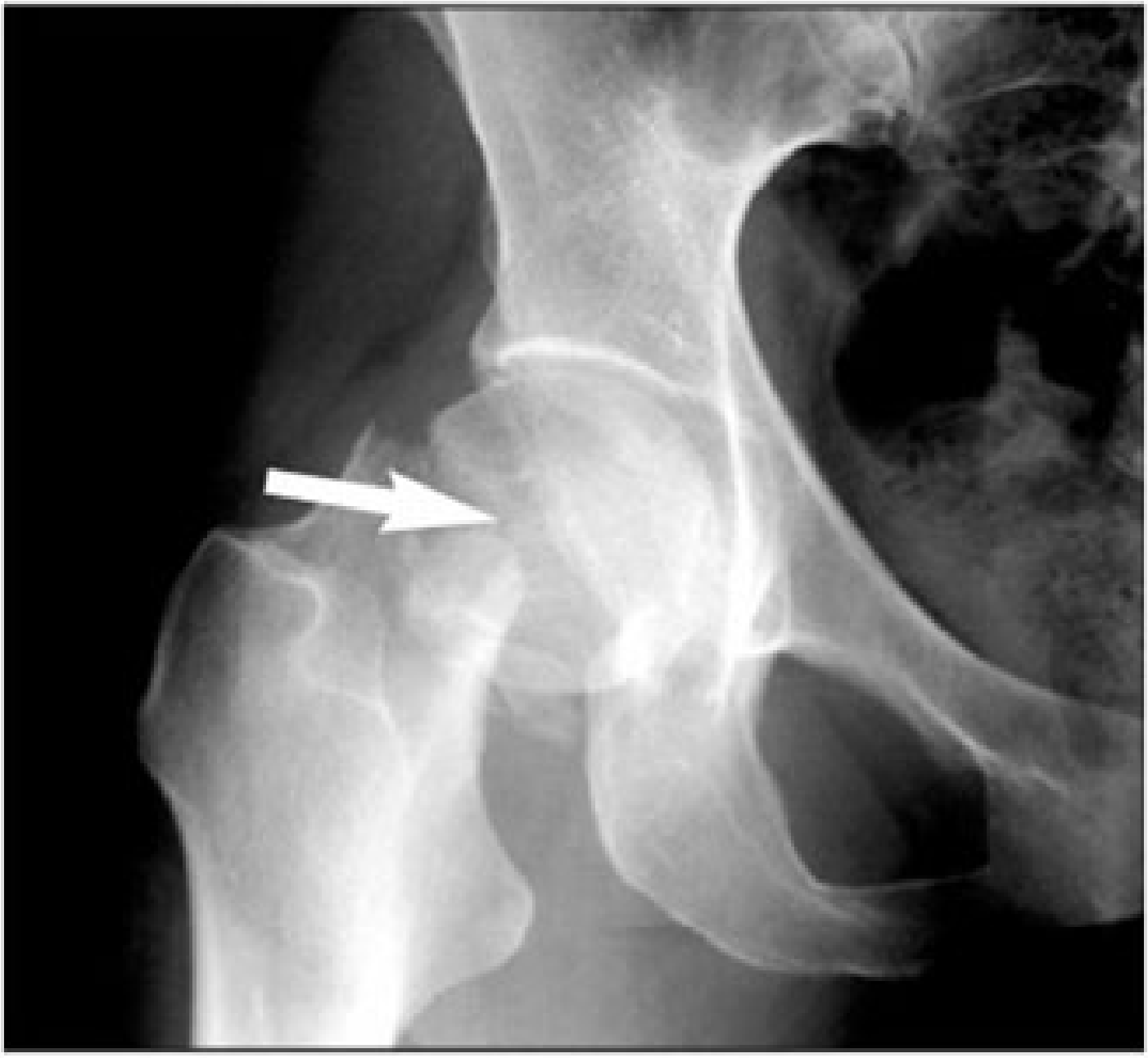
Ladislava Pavlíková
ÚKBD FN Hradec Králové
Osteocentrum Hradec Králové
Biolab 2010

Těžká osteoporóza

- Významný nález na kostní denzitometrii
- Komplikovaná typickými kompresemi bez úrazového mechanismu
- Někdy selhání předchozí antiresorpční léčby

Colles' fracture of the wrist

Femoral neck fracture



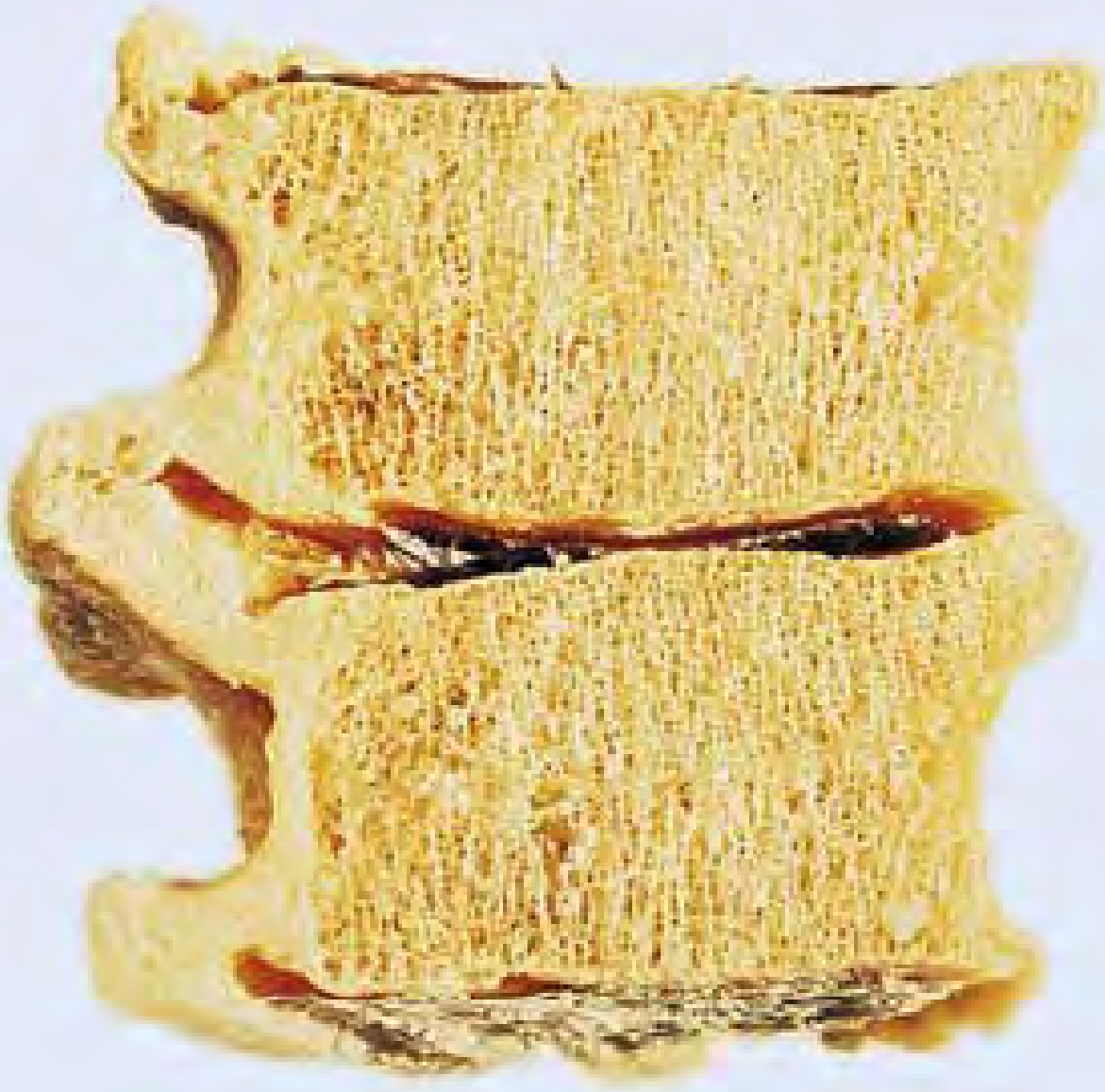
Compression fractures of lumbar vertebrae

First fracture

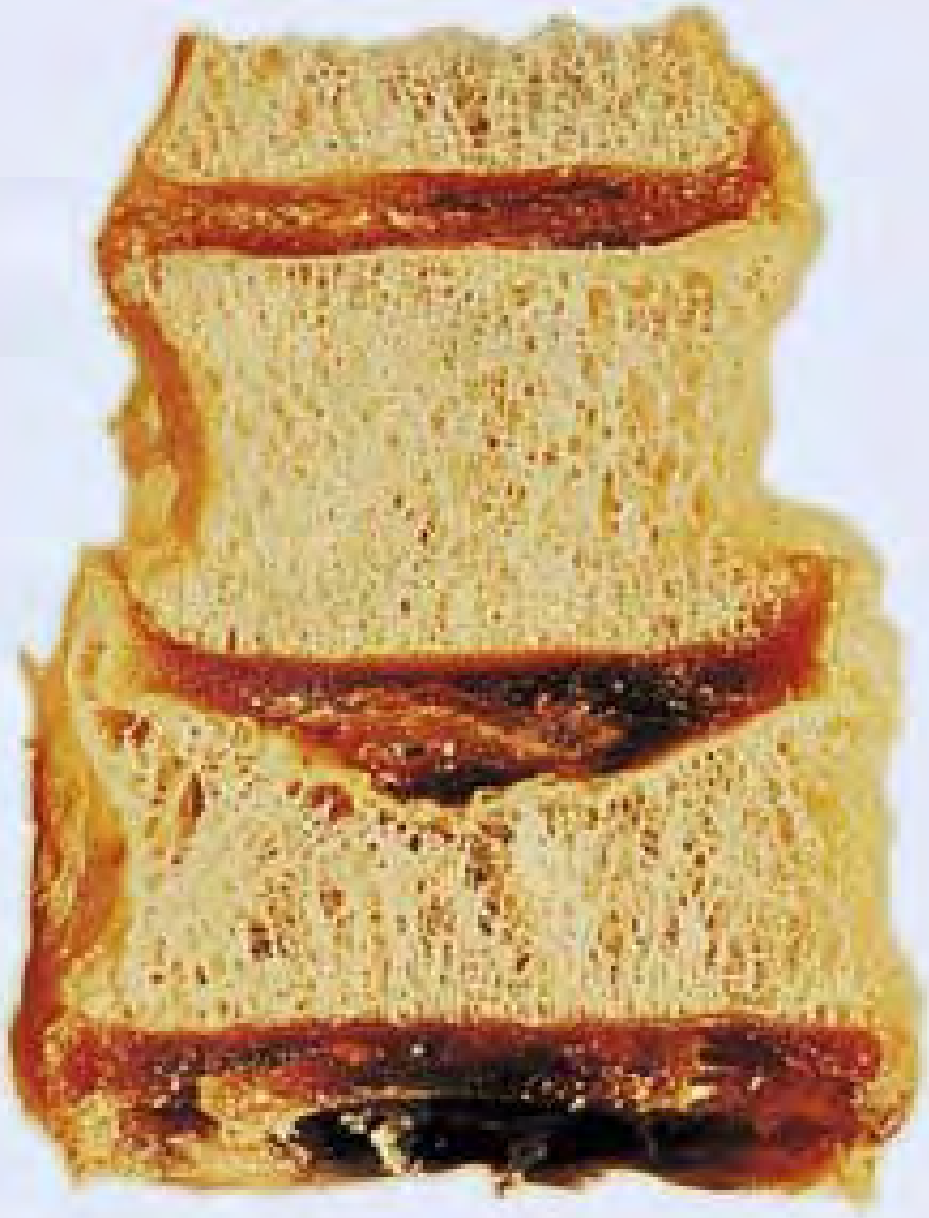
10 years after first fracture

20 years after first fracture

Normal trabecular bone



Osteoporotic trabecular bone



Etiologie

- senilní,postmenopauzální
  pokles pohlavních hormonů,Ca a vit. D
- sekundární-při chronických chorobách nebo následkem jejich terapie
  - např :GIT-celiakie,Crohnova ch. malabsorbce
  - inaktivita-onemocnění svalů,CNS-RSM,neuropatie
- poruchy Ca/P metabolismu

Parathormon

- Produkován příštitnými tělísky
- S jinými hormony se podílí na udržení hladiny Ca
- Ca 2,17 – 2,65 mmol/l

Cílové orgány PTH

Kosti

- zvyšuje kostní resorpci
- zvyšuje počet a aktivitu osteoblastů i osteoklastů
- hyperkalcémie

Parathormon

Ledviny

- zvyšuje tvorbu 1,25 OHD3
- zvyšuje tubulární reabsorpci Ca
- snižuje reabsorpci a exkreci fosfátů snižuje plasmatickou koncentraci fosfátů

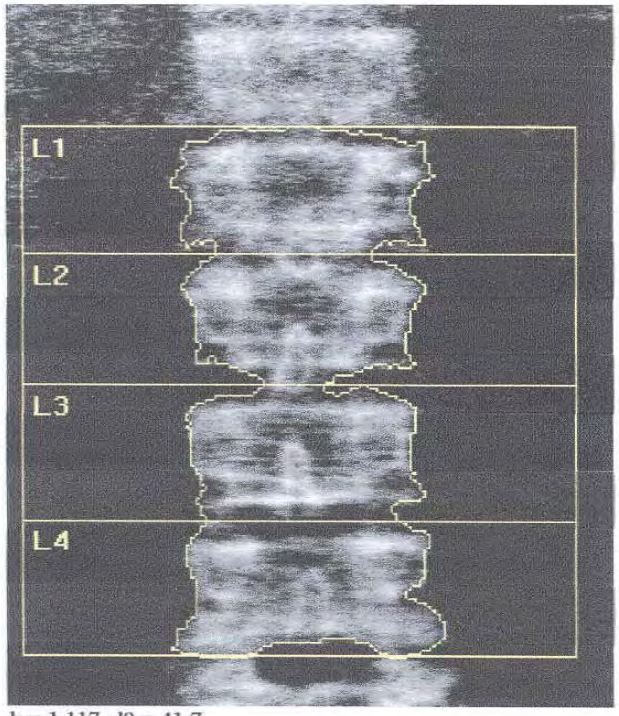
Parathormon

Střevo

- prostřednictvím 1,25 OHD3 zvyšuje absorpci Ca ze střeva
- zvyšuje reabsorpci fosfátů

Primární hyperparathyreóza

- Hyperkalcemie,hyperkalciurie, hypofosfatemie
- Vysoká hodnota PTH
- Nízká kostní denzita



k = 1.117, d0 = 41.7
116 x 142

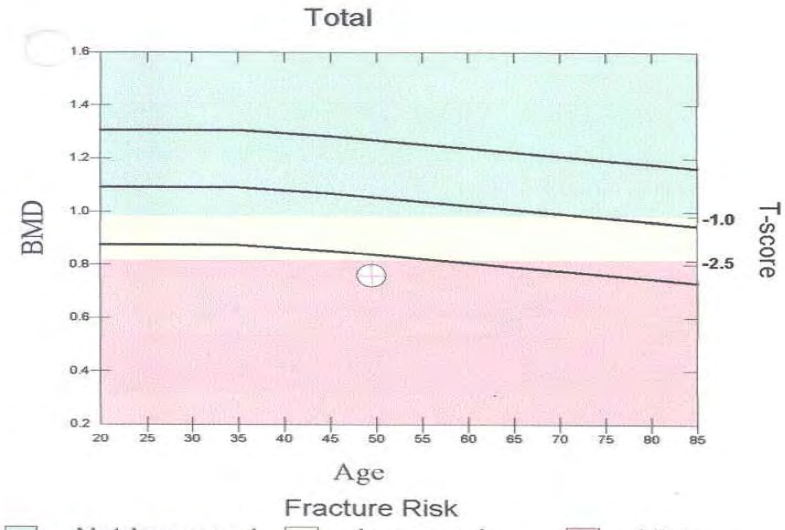
Scan Information:

Scan Date: 09 September 2008 ID: A0909081S
Scan Type: a Lumbar Spine
Analysis: 09 September 2008 12:17 Version 12.7.3:3 Spine
Operator: VH
Model: Discovery A (S/N 83551)
Comment:

DXA Results Summary:

Region	Area (cm²)	BMC (g)	BMD (g/cm²)	T - score	PR (%)	Z - score	AM (%)
L1	15.82	12.63	0.798	-2.5	74	-2.2	77
L2	14.70	11.42	0.777	-2.9	71	-2.6	73
L3	15.66	11.33	0.724	-3.4	66	-3.1	68
L4	17.42	12.86	0.738	-3.2	68	-2.9	70
Total	**63.61**	**48.24**	**0.758**	**-3.0**	**70**	**-2.7**	**72**

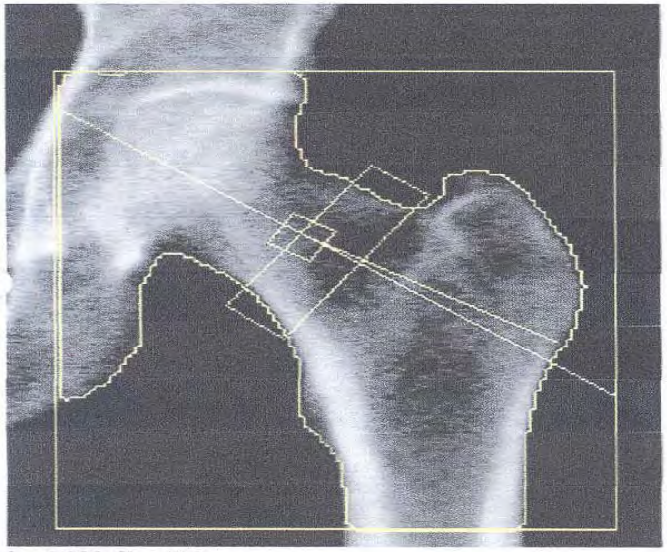
Total BMD CV 1.0%, ACF = 1.028, BCF = 1.001, TH = 7.950
WHO Classification: Osteoporosis
Fracture Risk: High



T-score vs. White Male; Z-score vs. White Male. Source:BMDCS/Hologic

Physician's Comment:

HOLOGIC®



k = 1.125, d0 = 47.0
109 x 125
NECK: 49 x 15
HAL: 117 mm

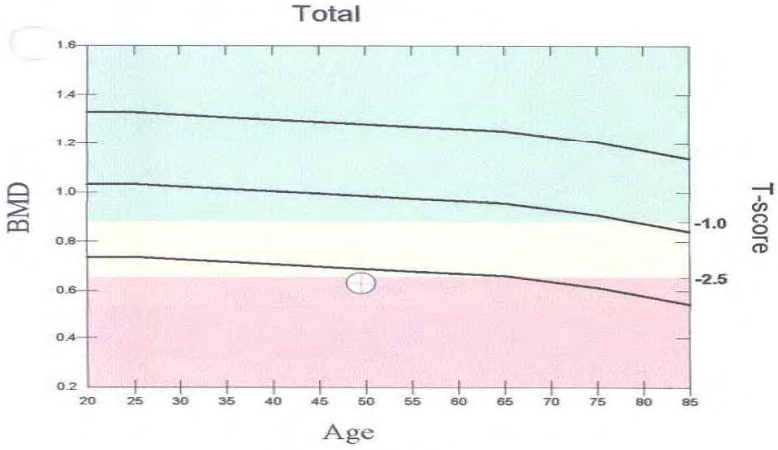
Scan Information:

Scan Date: 09 September 2008 ID: A0909081T
Scan Type: a Left Hip
Analysis: 09 September 2008 12:17 Version 12.7.3:3 Hip
Operator: VH
Model: Discovery A (S/N 83551)
Comment:

DXA Results Summary:

Region	Area (cm²)	BMC (g)	BMD (g/cm²)	T - score	PR (%)	Z - score	AM (%)
Neck	5.59	2.65	0.474	-3.3	51	-2.6	57
Troch	13.32	6.25	0.469	-2.4	60	-2.2	63
Inter	25.95	19.41	0.748	-2.5	63	-2.3	64
Total	**44.86**	**28.32**	**0.631**	**-2.7**	**61**	**-2.3**	**64**
Ward's	1.04	0.42	0.408	-2.7	52	-1.4	67

Total BMD CV 1.0%, ACF = 1.028, BCF = 1.001, TH = 5.653
WHO Classification: Osteoporosis
Fracture Risk: High



Fracture Risk
Not Increased Increased High
T-score vs. White Male; Z-score vs. White Male. Source:BMDCS/NHANES

Physician's Comment:

61
MUDr. Ladislav Popelka
odborný lékař

HOLOGIC®

PTH v léčbě

- PTH v malých dávkách působí jako účinné anabolikum, obnovující stavbu kosti
- zvyšuje apozici nové kosti na povrchu trámčité i kortikální kosti preferenční stimulací osteoblastů,která převládá nad aktivitou osteoklastů
- zlepšení kvality kosti =>zlepšení kostní mikroarchitektury
- zvýšení kostní denzity
- účinné a přetrvávající snížení rizika fraktur

PTH v léčbě

Zařazení do léčby

- anamnestická data
  mj. délka menopauzy, data o délce a úspěšnosti léčby, zlomeniny
- DEXA
- RTG páteře
- laboratorní vyšetření
  Ca, OTC, Beta Cross, ALP, kALP

Schvalovací kritéria

- T-scóre L-páteře méně nebo rovno -3,0 SD a zároveň více než dvě zlomeniny obratle a zároveň selhání minimálně dvouleté antiresorpční léčby
- GIOP T-scóre L-páteře méně nebo rovno -2,5 SD a současně léčba glukokortikoidy po dobu více než 6 M v denní dávce větší nebo rovno 5 mg prednisonu
- Muži i ženy

Léčba je vázána na centra

- Osteocentrum VFN Praha
- Osteocentrum MEDISCAN Praha
- Osteocentrum Revmatologický ústav Praha
- Osteocentrum ÚVN Praha
- Osteocentrum FN Hradec Králové
- Osteocentrum nem.Pardubice
- Osteocentrum nem.České Budějovice
- Osteocentrum FN Plzeň
- Osteocentrum Zlín
- Osteocentrum FNsP Ostrava
- Osteocentrum FNsP Olomouc
- Revmatologie FN Brno

Podávání

- Podávání schvaluje indikační komise pro léčbu derivátem PTH (sestavená dle rozhodnutí Kategorizační komise MZ, vedení VZP a SMOS)
- Preparáty

  Forsteo 2005

  teriparatid

  N terminální část přirozeného PTH

  Preotact 2009

  identický s lidským PTH

  shodný počet 84 AA
- Produkovány E.coli za použití rekombinantní DNA technologie

Podávání

1x denně s.c.Injekce, 24 měsíců

Forsteo

- 20 ug do břicha nebo stehna
- doporučené kontroly za 6,12,18 a 24měsíců

Preotact

- 100 ug do břicha
- doporučené kontroly 1,3,6,12,18 a 24 měsíců

Ca a vit. D suplementujeme , je-li příjem nedostatečný

Podávání

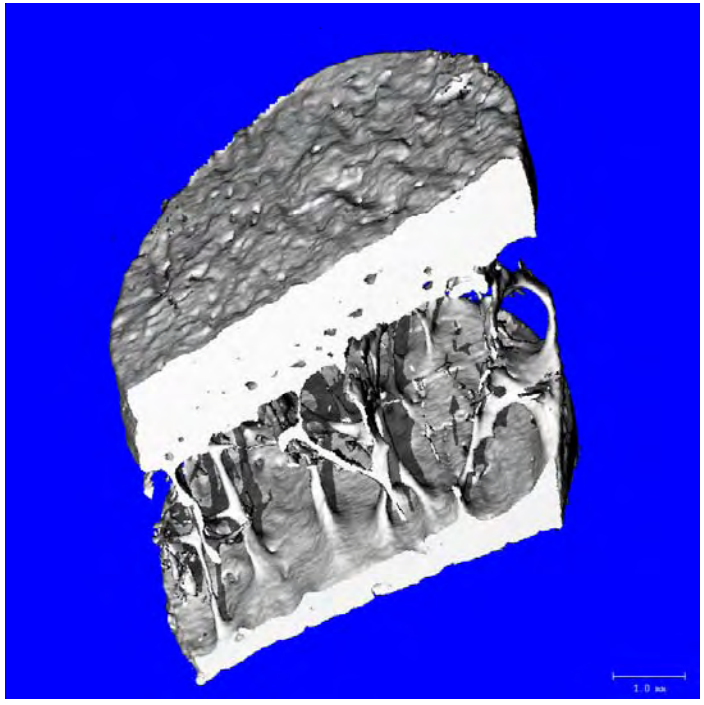
Během léčby

- doporučené kontroly, lab. vyšetření při každé kontrole, 2x DEXA

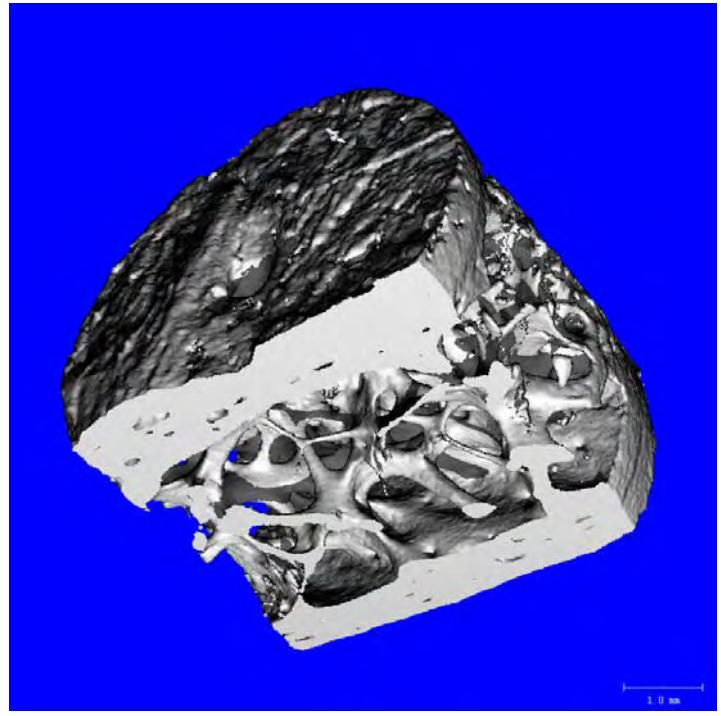
Po ukončení léčby

- pokračování v terapii osteoporózy nejčastěji bisfosfonátem
- předání zpět odesílajícímu lékaři nebo nadále v péči osteocentra

Vliv teriparatidu na strukturu kosti

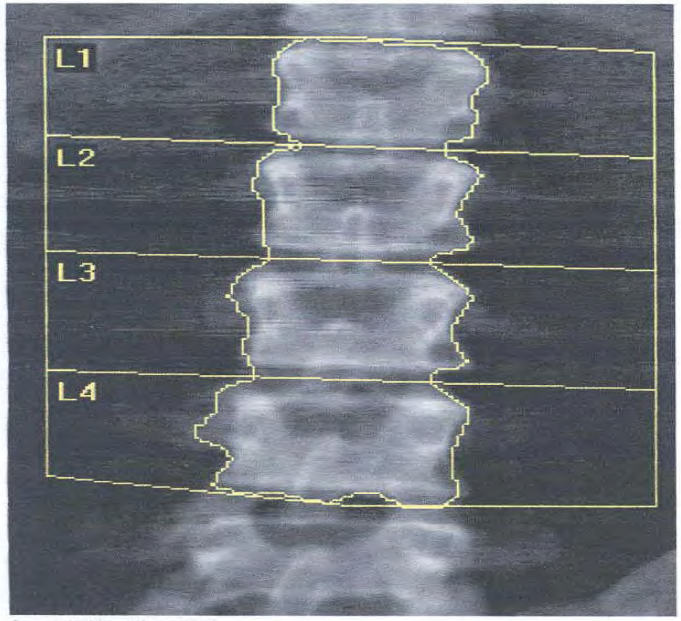


před terapií
Pacientka léčena TPTD 20μg



po 19 měsíční terapii

Jiang, et al., J Bone Miner Res 2003; 18(11):1932-1941



k = 1.143, d0 = 49.4
116 x 130

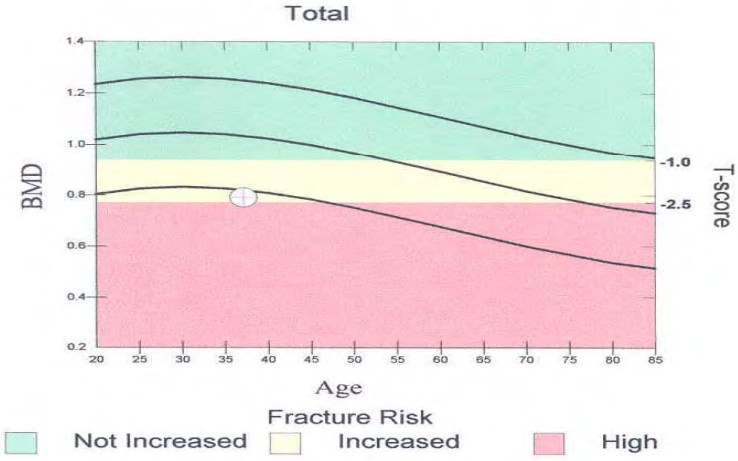
Scan Information:

Scan Date: 09 July 2008 ID: J0709080W
Scan Type: a Lumbar Spine
Analysis: 09 July 2008 10:20 Version 12.4:3
Lumbar Spine
Operator: VJ
Model: Delphi A (S/N 45088)
Comment:

DXA Results Summary:

Region	Area (cm²)	BMC (g)	BMD (g/cm²)	T - score	PR (%)	Z - score	AM (%)
L1	10.96	7.60	0.693	-2.1	75	-2.0	76
L2	12.16	9.85	0.810	-2.0	79	-1.9	80
L3	13.40	10.81	0.807	-2.5	74	-2.4	75
L4	15.05	12.49	0.830	-2.6	74	-2.5	75
Total	**51.57**	**40.75**	**0.790**	**-2.3**	**75**	**-2.2**	**76**

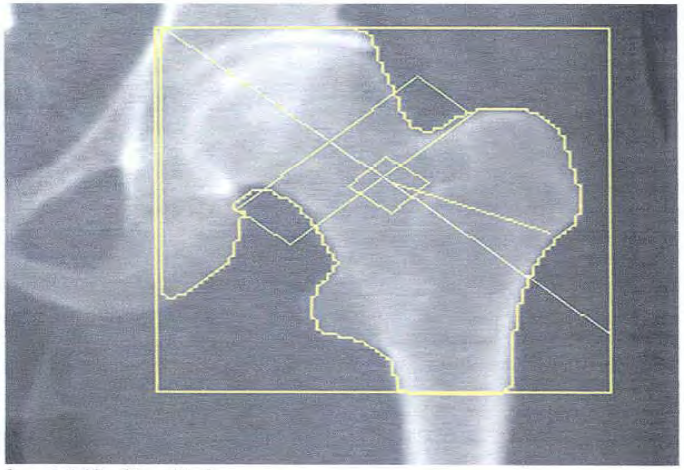
Total BMD CV 1.0%, ACF = 1.023, BCF = 0.996, TH = 4.634
WHO Classification: Osteopenia
Fracture Risk: Increased



T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/Hologic

Physician's Comment:

HOLOGIC®



k = 1.148, d0 = 51.4
86 x 96
NECK: 49 x 15

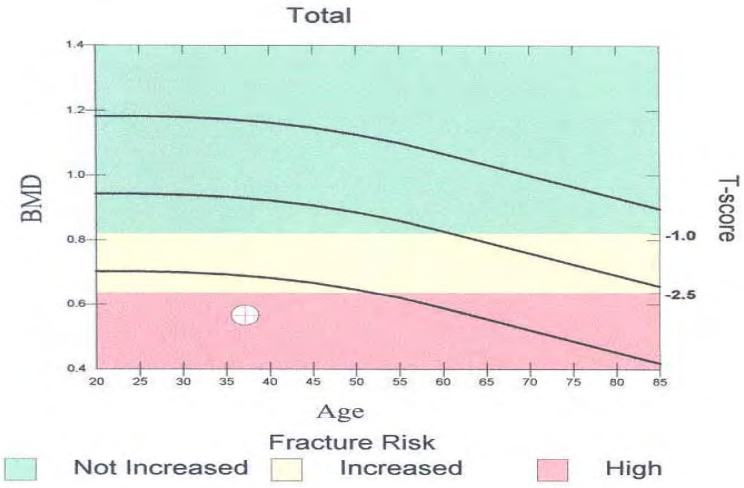
Scan Information:

Scan Date: 09 July 2008 ID: J0709080X
Scan Type: a Left Hip
Analysis: 09 July 2008 10:19 Version 12.4:3
Left Hip
Operator: VJ
Model: Delphi A (S/N 45088)
Comment:

DXA Results Summary:

Region	Area (cm^2)	BMC (g)	BMD (g/cm^2)	T - score	PR (%)	Z - score	AM (%)
Neck	5.05	2.74	0.543	-2.8	64	-2.5	66
Troch	7.89	4.00	0.507	-1.9	72	-1.9	73
Inter	17.11	10.25	0.599	-3.2	54	-3.2	55
Total	**30.05**	**16.99**	**0.565**	**-3.1**	**60**	**-3.0**	**61**
Ward's	1.29	0.62	0.482	-2.2	66	-1.7	71

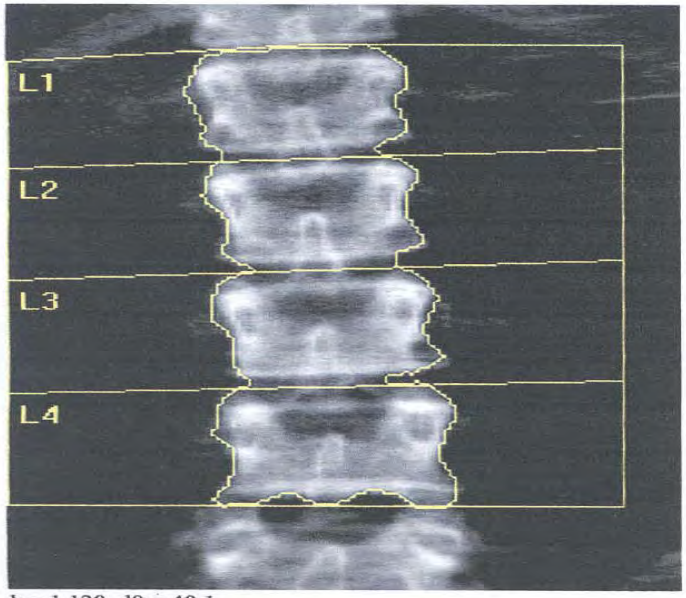
Total BMD CV 1.0%, ACF = 1.023, BCF = 0.996, TH = 4.335
WHO Classification: Osteoporosis
Fracture Risk: High



T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/NHANES

Physician's Comment:

HOLOGIC®



k = 1.128, d0 = 48.1
116 x 130

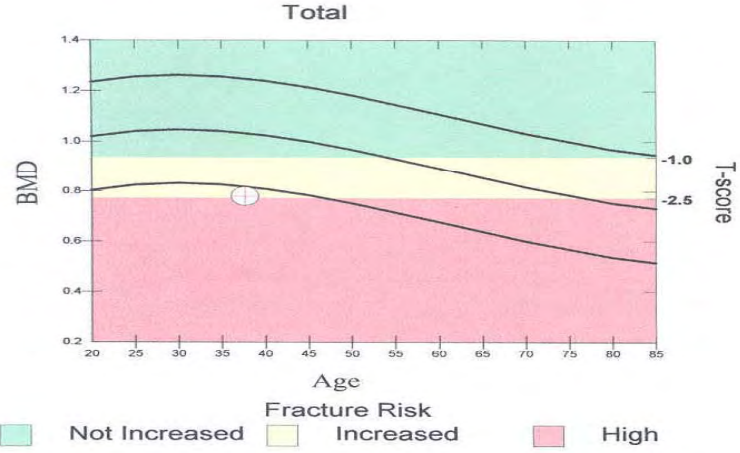
Scan Information:

Scan Date: 14 January 2009 ID: A0114090H
Scan Type: a Lumbar Spine
Analysis: 14 January 2009 08:52 Version 12.7.3:3 Spine
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:

DXA Results Summary:

Region	Area (cm²)	BMC (g)	BMD (g/cm²)	T - score	PR (%)	Z - score	AM (%)
L1	11.84	8.76	0.740	-2.3	75	-2.2	76
L2	11.27	9.05	0.803	-2.0	78	-1.9	79
L3	12.65	10.22	0.808	-2.5	75	-2.4	76
L4	13.55	10.37	0.766	-2.7	72	-2.5	73
Total	**49.30**	**38.40**	**0.779**	**-2.4**	**74**	**-2.3**	**75**

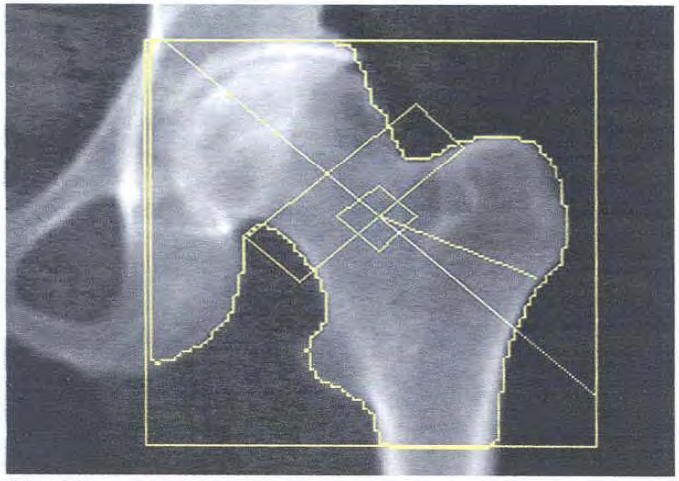
Total BMD CV 1.0%, ACF = 1.028, BCF = 1.001, TH = 4.816
WHO Classification: Osteopenia
Fracture Risk: Increased



T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/Hologic

Physician's Comment:

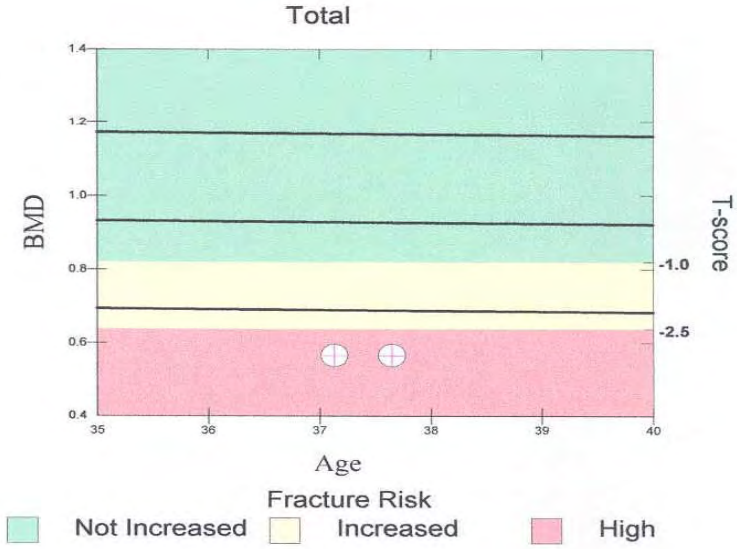
HOLOGIC®



86 x 94
NECK: 46 x 15
HAL: 95 mm

Scan Information:

Scan Date: 14 January 2009 ID: A0114090I
Scan Type: a Left Hip
Analysis: 14 January 2009 08:52 Version 12.7.3
Hip
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:

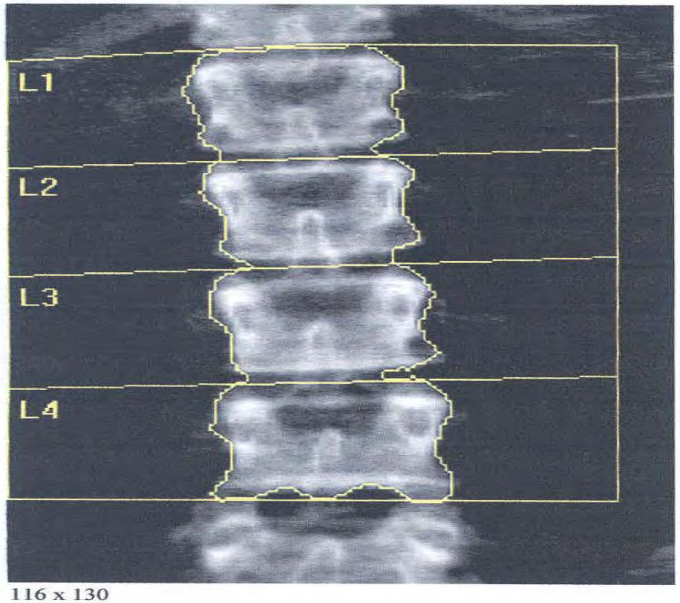


DXA Results Summary:

T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/NHANES

Scan Date	Age	BMD (g/cm²)	T - score	BMD Change vs Baseline	BMD Change vs Previous
14.01.2009	37	0.565	-3.1	0.0%#	0.0%#
09.07.2008	37	0.565	-3.1		

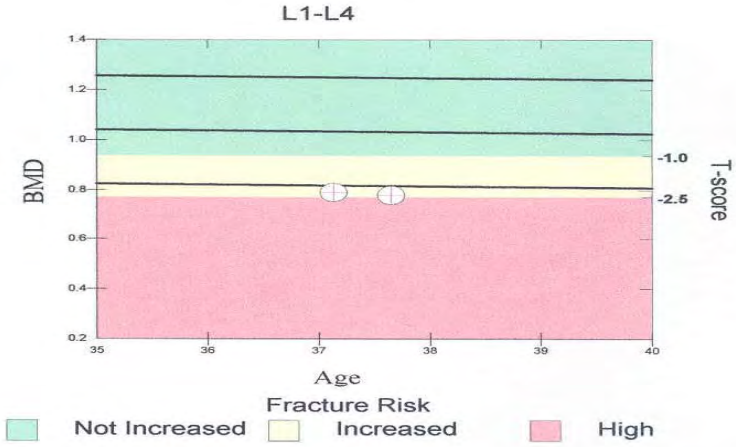
* Denotes significance at 95% confidence level, LSC is 0.026675 g/cm²
# Denotes dissimilar scan types or analysis methods.



116 x 130

Scan Information:

Scan Date: 14 January 2009 ID: A0114090H
Scan Type: a Lumbar Spine
Analysis: 14 January 2009 08:52 Version 12.7.3 Spine
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:



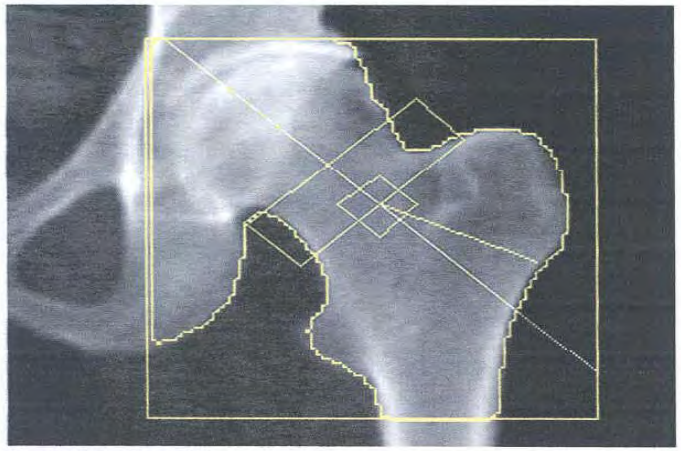
DXA Results Summary: L1-L4

T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/Hologic

Scan Date	Age	BMD (g/cm²)	T - score	BMD Change vs Baseline	BMD Change vs Previous
14.01.2009	37	0.779	-2.4	-1.5%#	-1.5%#
09.07.2008	37	0.790	-2.3		

* Denotes significance at 95% confidence level, LSC is 0.022326 g/cm²
\# Denotes dissimilar scan types or analysis methods.

HOLOGIC®



k = 1.129, d0 = 52.1
86 x 94
NECK: 46 x 15
HAL: 95 mm

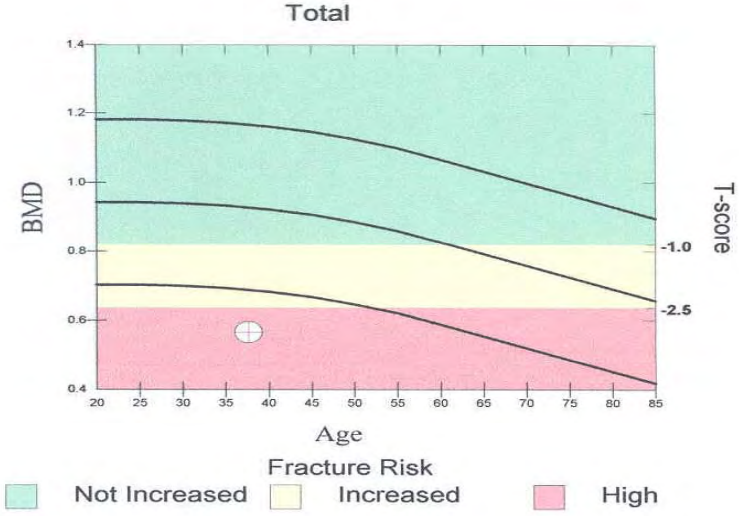
Scan Information:

Scan Date: 14 January 2009 ID: A0114090I
Scan Type: a Left Hip
Analysis: 14 January 2009 08:52 Version 12.7.3:3
Hip
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:

DXA Results Summary:

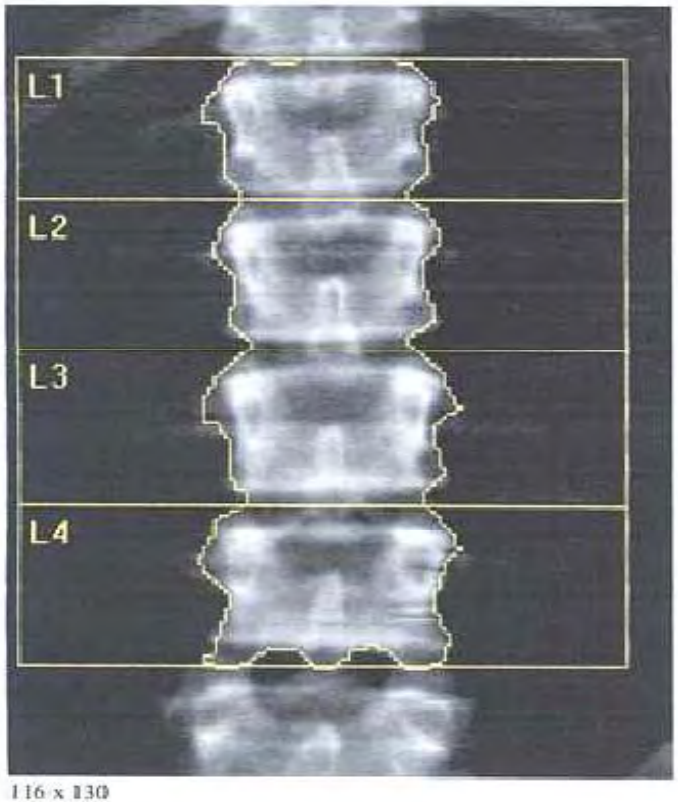
Region	Area (cm²)	BMC (g)	BMD (g/cm²)	T - score	PR (%)	Z - score	AM (%)
Neck	5.00	2.51	0.502	-3.1	59	-2.9	61
Troch	7.82	3.61	0.463	-2.4	66	-2.3	66
Inter	15.62	9.96	0.637	-3.0	58	-2.9	58
Total	**28.44**	**16.08**	**0.565**	**-3.1**	**60**	**-3.0**	**61**
Ward's	1.29	0.60	0.464	-2.3	63	-1.8	68

Total BMD CV 1.0%, ACF = 1.028, BCF = 1.001, TH = 4.160
WHO Classification: Osteoporosis
Fracture Risk: High



T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/NHANES

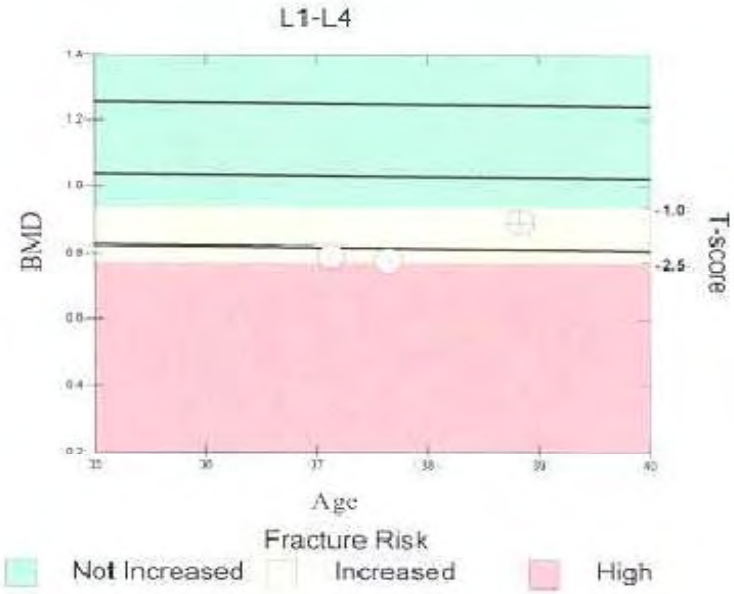
Physician's Comment:



116 x 130

Scan Information:

Scan Date: 24 March 2010 ID: A0324100Q
Scan Type: a Lumbar Spine
Analysis: 24 March 2010 09:04 Version 12.7.3.2 Spine
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:



DXA Results Summary: L1-L4

T-score vs. White Female; Z-score vs. White Female Source:BMDCS/Hologic

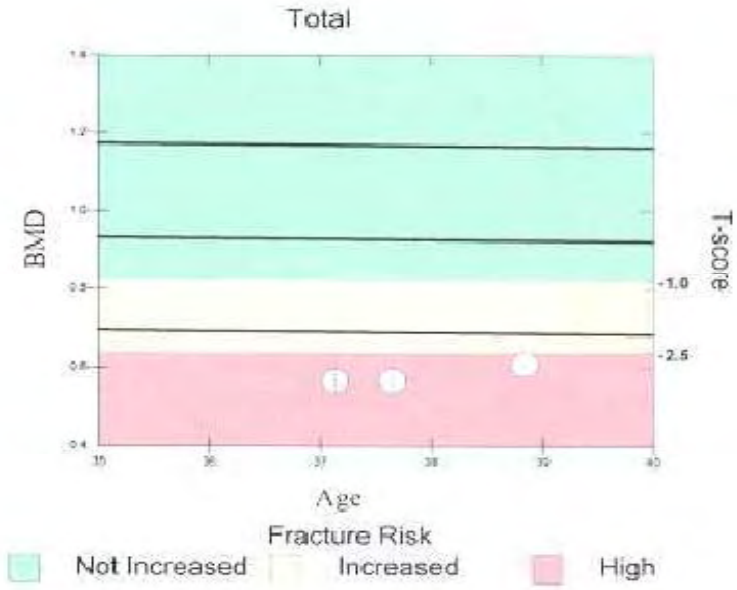
Scan Date	Age	BMD (g/cm²)	T-score	BMD Change vs Baseline	BMD Change vs Previous
24.03.2010	38	0.893	-1.4	13.0%#	14.7%*
14.01.2009	37	0.779	-2.4	-1.5%#	-1.5%#
09.07.2008	37	0.790	-2.3		

* Denotes significance at 95% confidence level, LSC is 0.022326 g/cm²
# Denotes dissimilar scan types or analysis methods.

85 x 96
NECK: 49 x 15
HAL: 92 mm

Scan Information:

Scan Date: 24 March 2010 ID: A0324100R
Scan Type: a Left Hip
Analysis: 24 March 2010 09:04 Version 12.7.3.2
Hip
Operator: VJ
Model: Discovery A (S/N 83551)
Comment:



DXA Results Summary:

T-score vs. White Female; Z-score vs. White Female. Source:BMDCS/NHANES

Scan Date	Age	BMD (g/cm²)	T-score	BMD Change vs Baseline	BMD Change vs Previous
24.03.2010	38	0.606	-2.8	7.2%#	7.3%*
14.01.2009	37	0.565	-3.1	0.0%#	0.0%#
09.07.2008	37	0.565	-3.1		

* Denotes significance at 95% confidence level, LSC is 0.026675 g/cm²
# Denotes dissimilar scan types or analysis methods.

Děkuji Vám za pozornost.