

*

*

1.

가

-2.5
(osteoporosis), -1.0 ~ -2.5
(osteopenia), -1.0
(Kanish, Melton,
Christiansen, Johnston, & Khaltae, 1994).

가
1~2%가 (가
, 1992).
2가

가

* 1998 ()
**

27%

가

18~58%

(Dykman et al., 1985; 1.

Reid et al., 1982; Sambrook & Reeve, 1988).

148

3

Gough (1994) 1

가

CRP(C-reactive protein) 3

가 1 CRP가 2.

가 2

가 가

가

1998 10 1999

1 1~5mg 4 D

CRP 가 68

가

가

가

120 3.

Lane (1995) 1)

(1)

가 (,)

가 3 , 2 ,

1

가

가 (,)

(Kennedy,

Smith, Buchanan, Anderson, & Jasani, 1975 ;

Reid et al., 1982 ; Sambrook, et al., 1987).

가

3 , 1-2 3-4 2 ,

1

가 (2)

Guy, Holman(1986) Health Assessment Questionnaire (HAQ) 가

Fries, Spitz, (1996)가

5.

SPSS PC+

26
4 가

: Ritchie Articular Index(RAI)

26 0-3
4 0 가

1.

, 2
, 3

57.95

1 34

(Ritchie, Boyle, & McInnes, 1968).

10.2 4.94

RAI 가 0 78

3.13 23.55

< 1>.

C-reactive

Table 1. Clinical data of 68 postmenopausal patients with rheumatoid arthritis

protein

Var	Mean	S.D	range
Age(yr)	57.95	6.90	42-76
Weight (kg)	55.54	8.30	37-85
Height (cm)	155.60	4.80	147-167
Menarche	16.33	1.69	12-19
Menopause(yr)	10.20	7.88	1-34
Gravity	4.94	2.17	1- 9
Parity	3.13	1.41	0- 7
Feeding(month)	23.55	2.89	0-180

Ledercorte 4mg Prednisolone 5mg Ledercort 1

2)

"Lunar" X-
(DXA) (L2-4)

Ward

(g/cm³)

68.91 104

83.89

78 8.01

4.

1998 10 1999 4 30

CRP가 31.83, 22.45 ESR

D

1

379 1.66mg 1

4.075mg <

2>.

Table 2. Clinical & laboratory data of disease activity and steroid dose

Var	Mean	S.D	range
Duration(mo)	68.91	89.80	1-360
HAQ	83.39	14.81	45-103
RAI	8.01	9.02	0- 42
ESR(mm/hr)	31.83	17.42	0- 64
CRP(nmole)	22.45	34.93	0-205
Steroid dose(mg)	3791.66	3058.09	525-12600

Duration : duration of disease,
Steroid dose : cumulated steroid dose

2.

가

가

가

가

가

CRP가

(p<.001).

가

CRP가

HAQ가

(p<.05).

3.

Ward

.9818 ± .1763, .5874 ± .1497

< 4>

Table 4. Pearson correlation between individual characteristics with bone mineral density in lumbar and femur Ward's triangle

	Age	Ht	Wt	Mena	Gra	Par	Meno	Feeding
Lumbar	-.41***	.17	.32***	-.17	-.10	-.16	-.39***	-.18
Femur	-.41***	.07	.40***	-.08	-.25*	-.24*	-.29*	-.28**

*<.05 **<.01 ***<.001

Mena : age of menarche

Par: parity

Gra: gravity

Meno: menopausal period

Feeding : breast feeding period

19.1%가 , 41.2%가
60.3%가
Ward 35.3%가 ,
48.5%가 16.2%
83.8%가
< 3>

Table 3. Classification of patients according to the bone mineral density in lumbar and femur Ward's triangle

Site	Osteoporosis N(%)	Osteopenia N(%)	Normal N(%)
Lumbar	13(19.1)	28(41.2)	27(39.7)
Femur	24(35.3)	33(48.5)	11(16.2)

4.

1)

(p<.001)

Table 5. Pearson correlation between disease activity & steroid dose with bone mineral density in lumbar and femur Ward's triangle

	Duration	RAI	HAQ	ESR	CRP	Steroid
Lumbar	-.19	-.17	.22*	.04	-.09	-.12
Femur	-.38***	-.02	.30**	.08	-.09	-.06

*<.05 **<.01 ***<.001

Duration : duration of disease , Steroid: cumulative steroid dose

2) , , (HAQ), , CRP 가 가 가 85%가 가 12 가 Wilks' Lambda . Wilks' Lambda 1.00 가 가 93%가 78%가 가 가 1) < 6>

3) < 5> Ward CRP 가

Table 6. Canonical discriminant function coefficients in lumbar vertebrae

Variable	Standardized function coefficient	Unstandardized function coefficient
Age	.86181	.1358969
Weight	-.36610	-.4486150E-01
HAQ	-.30316	-.2067720E-01
(constant)		-3.659814

Eigen value .2806
 Wilks' Lambda .78 df 3 p<.01
 $Z = -3.65914 + 0.1358969 \times \text{age} - 0.4486150 \times \text{body weight} - 0.2067720 \times \text{health assessment score}$

3. 27 41 , 12 가 , 가 Ward 가 가 가

68

WHO
 83.8%가
 60.3%가,
 19.1%,
 Ward
 35.3%가
 Ward
 (HAQ)가,

8
 50%
 90%
 Ward
 CRP

가

NG (1994)
 27%
 4.075mg
 1
 57.7
 104
 83
 가
 가
 CRP
 가
 31.83mm/hr, 22.45nmol

(1998)
 60%,
 71.19%가
 가
 Hansen
 (1996)
 , CRP,
 ,
 ,

95 RA
 (metacarpal bone)
 (1996)
 Hansen
 (1996)
 가
 가
 가
 가

axial bone
 appendicular bone
 (Eggelmeijer, Pappoulos, &
 Westedt, 1993; Peel, Spittlehouse, Bax, &
 Eastell, 1994; Verstraeten & Dequeker, 1986)
 ,
 가
 Hall (1993)

가
6.9%

가
6.5%, 7.4%

(1 6.9mg)

76.4%, 85.2%

85.4%, 63.0%

100%, 9.09%

가 85.4% 100%

65
(1995)

Lane
9.09%

가

Gough (1994)
1-5mg

5mg

가 가

가

CRP
CRP

가

가

가

1998 10 1999 4

D
가 68

가

(DXA) X
Ward

SPSS

1) 가 19.1%, Ward
35.3%가

2) Ward , 가,

3) 85.4 % ,
63.0% Ward
100% ,
9.09%

, (1992).
 , 35(10), 1223-1229.
(1998).

5(1), 83-109.
(1996).

, 3(1), 63-89.
(1996).

, 3(1), 107-109.

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-Abstract-

key concept: Rheumatoid Arthritis, Reduced Bone Mass, Determinant, Postmenopausal Women.

Determinants of Reduced Bone Mass in Postmenopausal Women with Rheumatoid Arthritis *

*Lee, Eun Nam ***

This study was carried out to identify the important risk factors for reduced bone mass of postmenopausal RA patients and to develop discriminant function which can classify postmenopausal RA patients with either reduced or normal bone mass.

Through the literature review, individual characteristics such as age, body weight, height, age of menarche, duration of menopause, gravity, parity, and breast feeding period and factors of life style such as milk consumption exercise habit, alcohol intake, cigarette smoking, coffee consumption, disease activity, corticosteroid therapy were identified as influencing factors of reduced bone mass in RA patients

Sixty eight postmenopausal women with rheumatoid arthritis aged between 42 and 76 were selected among those who checked bone mineral density in lumbar spine and femur from October, 1998 to April, 1999 at Dong-a university hospital in Pusan.

Assessment of disease activity, duration of disease and corticosteroid therapy were made by the same rheumatologist and included Ritchie articular index, erythrocyte sedimentation rate, and C-reactive protein on measuring bone mineral density. Cumulative steroid dosage was

calculated from the daily dosage multiplied by the number of days received. The information of other risk factor including health assessment score, individual characteristics and life style factors were collected by questionnaire. Bone mineral density(BMD) was measured using DXA at lumbar spine and femoral Ward's triangle. Discriminant function(regression equation)was developed for estimating the likelihood of the presence or absence of reduced bone mass. The results are as follows :

Among the subjects, thirteen(19.1%) exhibited osteoporosis in lumbar spine and twenty four(35.3%) exhibited osteoporosis in femoral Ward's triangle.

For lumbar spine, the variables significant were age, body weight, health assessment score, while for femoral Ward's triangle, age, body weight, duration of disease. But disease activity and corticosteroid therapy were not significant to distinguish reduced bone mass from normal bone mass.

When the discriminant function was evaluated by comparing the observed outcome with predicted outcome, the discriminant function correctly classified 85.4% of patients with reduce bone mass and 63.0% of patients with normal bone mass in the lumbar spine and 100% of patients with reduced bone mass and 9.1% of patients with normal bone mass in the femoral Ward's triangle.

In summary, we found that osteoporosis in postmenopausal women with RA is more evident at the femur than the lumbar spine. Also the important discriminant factors of reduced bone mass postmenopausal women with RA were age, body weight, duration of disease and health disability.

In nursing situation, the efforts to improve of

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functional capacity of postmenopausal women with rheumatoid arthritis should be considered to prevent osteoporosis and fractures.

Also we recommend those postmenopausal women with RA who are classified as a group of

the reduced bone mass in the discriminant function should examine the bone mineral density to further examine the usefulness of this discriminant function.