



가
: 1999 5 2000 5
(mammography) 1713
가 172
가
가
가
($p < 0.05$).
가
($p > 0.05$).
($p < 0.05$)
가
가
가
가
(7).
가
가
가
가
1980 Baum (1)
Baum
(2, 3),
가
(4 - 6), 59
가
가

1

2

(mammography) 1713
 20 (26.3)가 47
 , 30 (34.6)가 456 , 40 (44.5)가 419
 , 50 (54)가 509 , 60 (63)가 245 ,
 70 (75.8) 37 .

DMR mammography unit (General Electric
 Medical Systems, Milwaukee, WI)
 (L. N. J)가 가

가
 가 chi -
 square test

90 Ultramark 9 HDI
 (Advanced technology laboratories, Bothell, WA)
 7.5 MHz linear transducer
 (atheroma)

가
 가
² - test

(Fig. 1)

(Table 1).

($p > 0.05$) (Table 2) ,

가 172
 30 가 1 , 40 가 3 , 50 가 34 , 60
 가 40 , 70 가 12 90 30

(Table 3). 31 (56.3%)

(Fig. 2) , 30% - 60%

(Fig. 3) 6 (10.9%) 60%

Table 1. Frequency of Breast Arterial Calcification by Age Distribution ($p < 0.05$)

Age	Breast arterial calcification		Total
	Absence (%)	Presence (%)	
20 - 29	47 (100)	0 (0)	47
30 - 39	455(100)	1(0)	456
40 - 49	414(99)	5(1)	419
50 - 59	449(88)	60(12)	509
60 - 69	164(67)	81(33)	245
70 -	12(35)	25(65)	37
Total	1541(90)	172(10)	1713

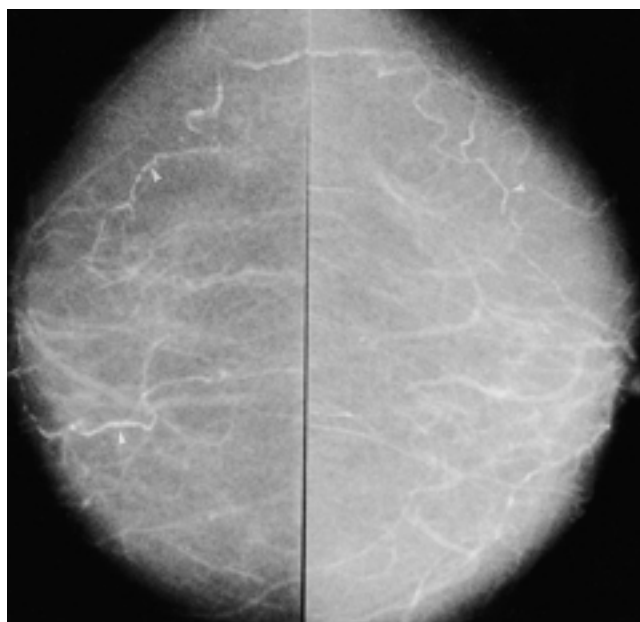


Fig. 1. Breast arterial calcification on mammogram (Categories: moderate). Arteries clearly outlined by calcification (arrowheads) for a considerable portion of its course.

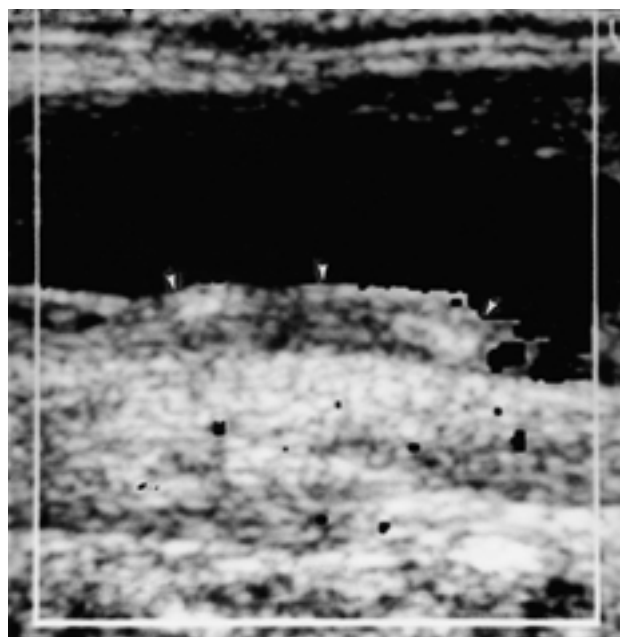


Fig. 2. Carotid arterial atherosclerosis on ultrasonogram. Atheroma is demonstrated by focal wall thickening (arrowheads) of artery on longitudinal scan.

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(p<0.05) ,

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Table 2. Correlation between Breast Arterial Calcification and Clinical Findings ($p>0.05$)

Age (No)	Hypertension		Diabetes Mellitus		Hyperlipidemia	
	BAC	Control	BAC	Control	BAC	Control
30 - 39 (1)						
40 - 49 (5)	3	2	1	2	1	2
50 - 59 (60)	23	20	21	14	27	29
60 - 69 (81)	31	41	21	14	31	44
70 - (25)	12	9	6	4	16	4
Total (172)	69	72	40	32	75	79

BAC: breast arterial calcification

Table 3. Correlation between Frequency of Arterial Calcification of Breast and Atheroma & Stenosis of Carotid Artery

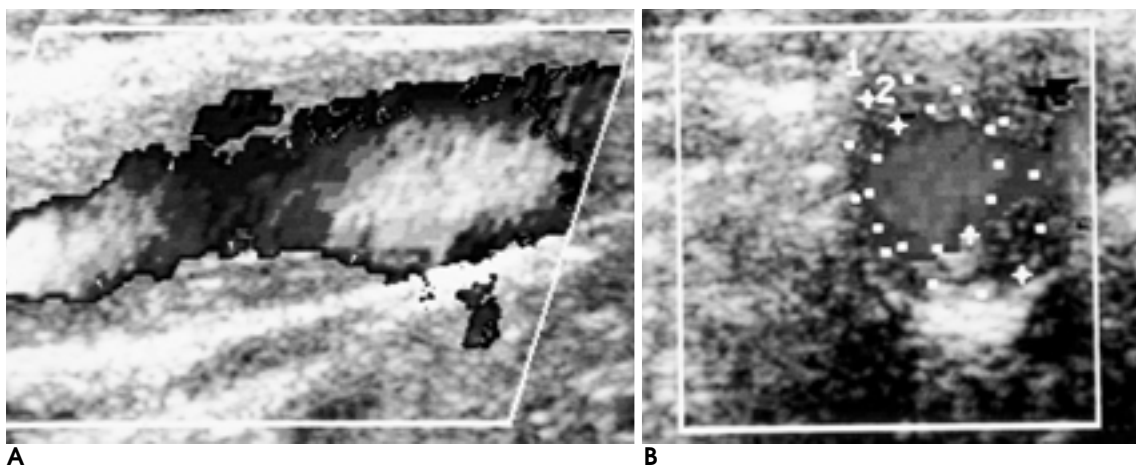
Age (No)	CAA		FWT		CCS (%)			
	BAC	Control	BAC	Control	< 30		30 - 60	
					BAC	Control	BAC	Control
30 - 39 (1)								
40 - 49 (3)	1		1					
50 - 59 (34)	18	10	10	8	6	2	2	
60 - 69 (40)	28	20	17	15	8	4	3	1
70 - (12)	8	9	3	2	4	3	1	4
Total (90)	55	39	31	25	18	9	6	5

BAC: breast arterial calcification

CAA: carotid arterial atheroma

FWT: focal wall thickening

CCS: cervical carotid stenosis

**Fig. 3.** Carotid arterial atheroma and stenosis on ultrasonogram with color flow image.**A.** Longitudinal scan shows atheroma (arrowheads) between color encoded blood flow filled lumen and arterial wall.**B.** Axial scan demonstrates about 45% stenosis of carotid artery (1. native arterial lumen involving atheroma. 2. color encoded blood flow filled patent lumen).

가 (1 - 3, 5). 가 59 가 59 가 가

가 가 가 가

Baum (1) 가 van Noord (5)

가 가

(2 - 5). Schmitt Sickles (2 - 3) , Baum (1)

가 가

40 , Schmitt (2 - 3) 1.8% 가

60 23.2% , 70 가

33.3 % 가

. Leinster (6) 가

가가

. 1996 van Noord (5)

[Relative risk (RR) 2.7; 95% CI 1.0 - 7.0] , (RR 1.1; 95% CI 1.0 - 1.3) , (RR 1.4; 95% CI 1.1 - 1.8) , (RR 1.5; 95% CI 1.0 - 2.2) , (RR 1.8; 95% CI 1.1 - 2.9)

(RR 1.7; 95% CI 1.2 - 2.4)
(screening mammography)

가

가

van Noord (5)

가

Moshyedi (7)

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Breast Arterial Calcification on Mammogram: Correlation with Carotid Arterial Atherosclerosis on Ultrasonogram¹

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Purpose: To investigate the incidence of breast arterial calcification in Korean women, and to determine its association with systemic diseases and carotid arterial atherosclerosis.

Materials and Methods: One thousand seven hundred and thirteen female subjects who underwent mammography at a health care center between May 1999 and May 2000 were included in this study. Of the total, 172 were found to have breast arterial calcification, and were classified according to age. The coincidence of hypertension, diabetes mellitus and hyperlipidemia was examined in both the subject group and the control group selected on the same age basis. To investigate the presence and degree of carotid atherosclerosis, sonographic imaging was performed and the findings were compared between the two groups.

Results: The incidence of breast arterial calcification showed statistically significant differences according to age, with a higher incidence in older patients ($p < 0.05$). However, there was no statistical difference in the incidence of hypertension, hyperlipidemia, and diabetes mellitus between groups. Carotid atherosclerosis was subjects more prevalent among subjects than in the control group ($p < 0.05$), though there was no statistically significant difference in the degree of luminal stenosis.

Conclusion: The most common pathologic cause of breast arterial calcification is arteriosclerosis. Breast arterial calcification is demonstrated at mammography, along with other clinical risk factors for atherosclerosis or coincidental neurologic symptoms. We stress that further evaluation of the carotid artery is necessary.

Index words : Breast radiography
Breast, calcification
Breast, US

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