# ULTRASONOGRAFIC CAROTID PLAQUE MORPHOLOGY IN WOMEN WITH RHEUMATOID ARTHRITIS WITHOUT PREVIOUS CARDIOVASCULAR EVENTS

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## INTRODUCTION

- Patients with inflammatory rheumatic diseases die prematurely, largely due to cardiovascular (CV) diseases.

- Atherosclerotic plaque vulnerability may be important for the occurrence of clinical events.

- High-resolution B-mode ultrasonography (US) of the carotid artery provides a noninvasive and reproducible method of identifying and characterizing atherosclerotic plaques. Previous data suggest that heterogeneous and echolucent plaques on US are more unstable and frequently contain a higher amount of lipids which make them hypoechoic.

## AIMS

To estimate the prevalence and ultrasonographic morphology of the carotid plaques in a cohort of Rheumatoid Arthritis (RA) patients without prevalent CV events.

## METHODS

- 69 RA women and 44 controls, age matched, free of clinically evident CV disease underwent clinical and carotid ultrasonographic assessment. RA patients with and without atherosclerotic plaques (AP) were compared and plaque morphology and location was analyzed.

## RESULTS

| Characteritics | RA (n=69) | CONTROLS (n=44) |
|---|---|---|
| Age | 47.68 ± 13.53 y | 49.19 ± 12.11 y |
| Intima-media thickness of carotid artery (median, min; max) | 0.0721 [0.045; 0.302] | 0.0717 [0.053; 0.171] |
| Atherosclerotic plaques (AP) | 15.94% | 11.36% |
| HTA/Dyslipidemia/Diabetes Mellitus/Smoking | 26.1%; 23.2%; 1.4%; 20.9% | 29.5%; 36.4%; 4.7%; 17.5%; |
| Disease duration (mean ±SD) | 7.7 ± 6.2 y | - |

**Table 1**. Caracterization of the study population, RA patients and controls, respectively.

Table 1 describes the characteristics of the study population. In RA patients the mean DAS28 and the mean HAQ score were 4.17 ± 1.41 and 1.01 ± 0.66, respectively.

| Characteristics (RA) | Without plaques (n=58) | With plaques (n=11) | p |
|---|---|---|---|
| Age (median; min; max) | 46.50 (19; 69) | 60.00 (31; 67) | 0.0013 |
| IMT (median min; max) | 0.035411 [0.045; 0.302] | 0.08417 [0.063; 0.212] | 0.0 |
| Number of CV risk factors (mean ± SD) | 1.73 ± 1,10 | 0.98 ± 1.10 | 0,038 |

**Table 2**. Characterization of AR patients with and without atherosclerotic plaques.

RA patients with plaques were older than RA patients without plaques (60.0 vs 46.5; p=0.013), had a higher intima-media thickness (IMT) (0.084 vs. 0.035; p=0.001) and a higher number of cardiovascular risk factors (1.73 vs 0.98; p=0.038).
There were no statistically significant differences between controls with and without plaques.

| Characteristics | AR (n=11) | CONTROLS (n=5) | P |
|---|---|---|---|
| Age (median; min; max) | 60 [31;67] | 59.00 [53; 62] | 0.570 |
| Disease duration (median; min; max) | 5.79 (1.57; 29.01) | - | |
| Hypertension, % | 36.4% (4) | 60.0 % (3) | 0.596 |
| Dyslipidemia, % | 27.3 % (3) | 60.0 % (3) | 0.299 |
| BMI, kg/m² (median; min; max) | 29.17 [18.32; 33.65] | 26.10 [23.63; 34.12] | 0.861 |
| Smoking % | 27.3% (3) | 20.0% (1) | 1.000 |
| Diabetes Mellitus | 9.1 (1) | 20.0% (1) | 1.000 |
| Intima-media thickness of carotid artery (median, min; max) | 0.084 [0.063; 0.212] | 0.090 [0.078;0.171] | 0.865 |

**Table 3**. Comparison between AR patients and controls with atherosclerotic plaques.

Eleven RA women (15.9%) presented at least one carotid plaque, while in controls plaques were found in 5 cases (11.36%) (Table 3). In both groups the plaques were mainly found in common carotid bifurcation.
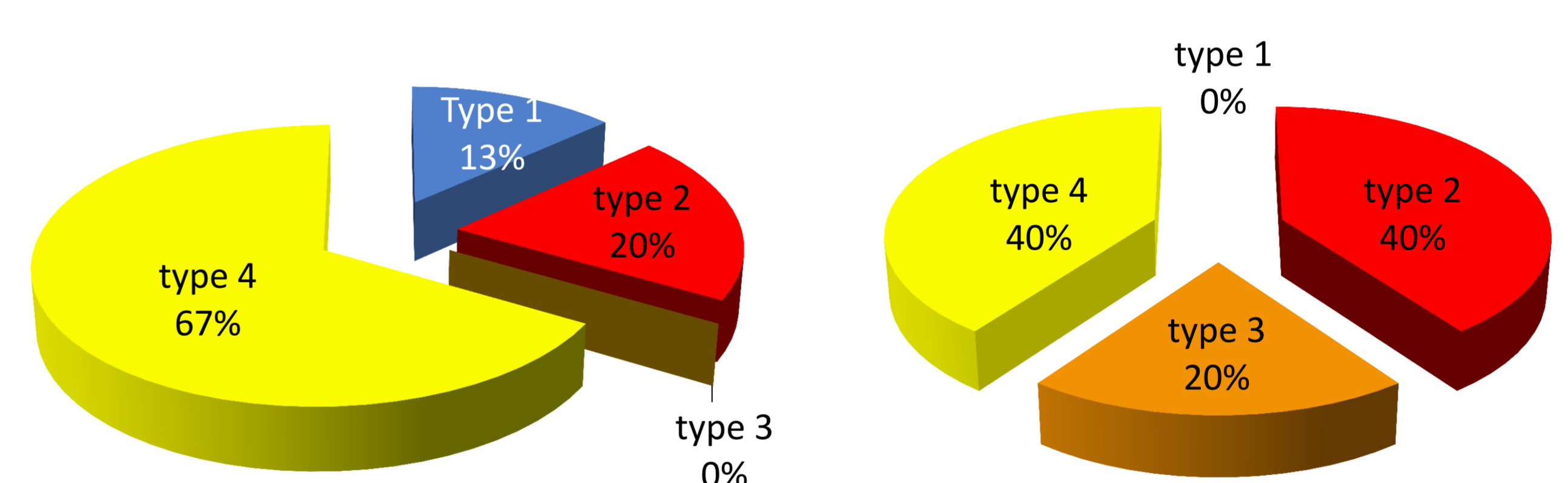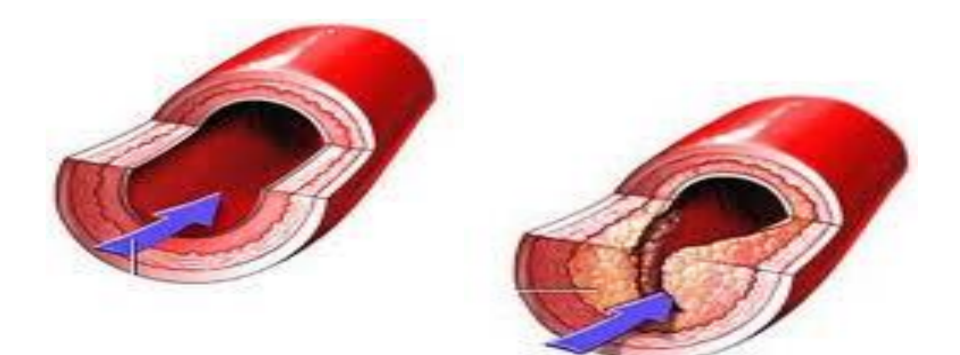


**Figure 4 and 5**. Types of atherosclerotic plaques in RA patients and controls, respectively.

According to the Gray-Weale classification, most RA patients had type 4 plaques (homogeneous, hyperechoic); in controls type 2 (heterogeneous hypoechoic, 50%) and 4 (50%) plaques were equally frequent.

## CONCLUSION

- In this group of young RA women with moderately active disease, subclinical atherosclerosis was mainly determined by traditional CV risk factors, in particular by age. No distinct disease characteristics could be identified among those with plaques.

- Despite the limitations of our sample size, we found some differences regarding the US type of plaques in RA and controls. Surprisingly, atherosclerotic plaques of RA patients displayed ultrasonographic characteristics of less instability, with higher amount of calcium and lower amount of lipids than controls. This is an interesting finding that is in agreement with the higher content of coronary calcium previously documented by other authors in RA and stresses the need for a tight control of traditional CV risk factors in patients with arthritis.

## BIBLIOGRAPHY

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