PLACE 2026
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

CONGRESSO
ROMA, 25 - 27 Giugno 2026

Cardiologia Clinica

Season Variability in atherosclerosis composition: insight from 1848 non-culprit coronary plaques

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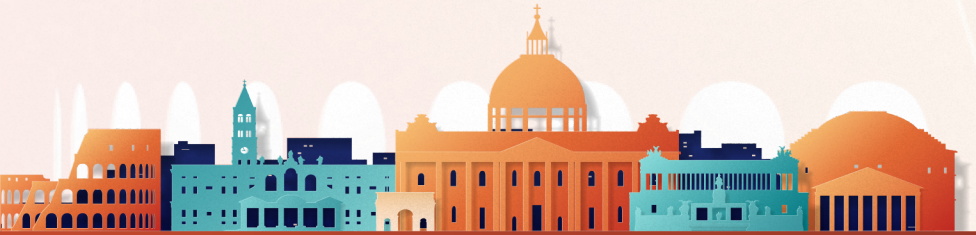
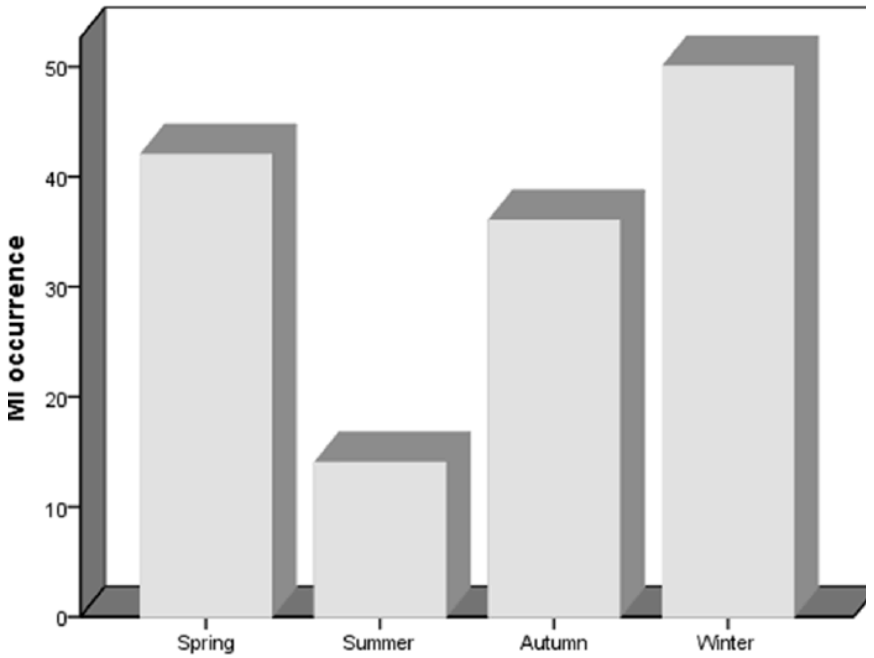


Centro per la Lotta Contro l'Infarto
Fondazione Onlus

UMG
Dubium sapientiae initium

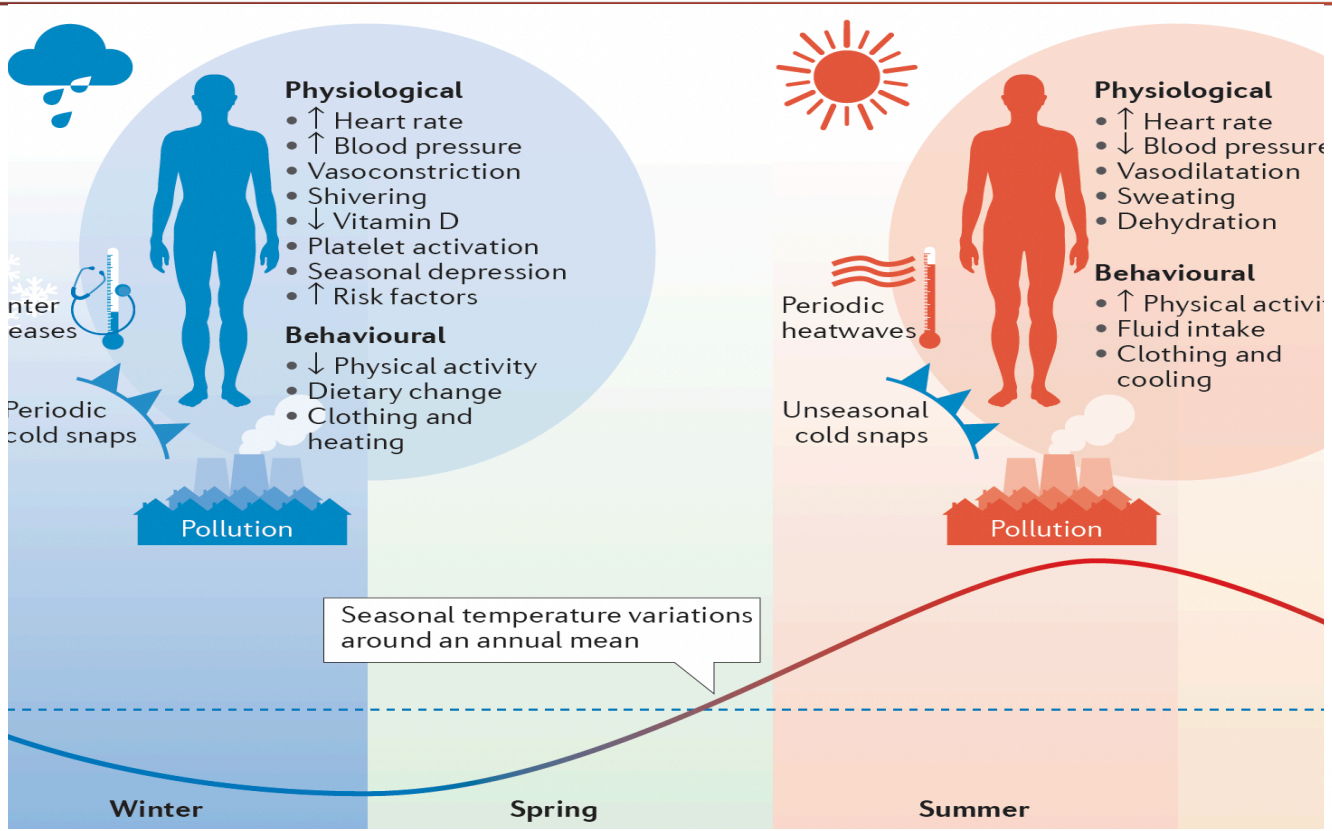
Backround

- Incidence of ACS- STEMI during Winter: 35.2%
- Incidence of ACS- STEMI during Spring: 29.6%
- Incidence of ACS- STEMI during Autumn: 25.4%
- Incidence of ACS- STEMI during Summer: 9.9%



Journal of Diabetes & Metabolic Disorders (2021) 20:765–770

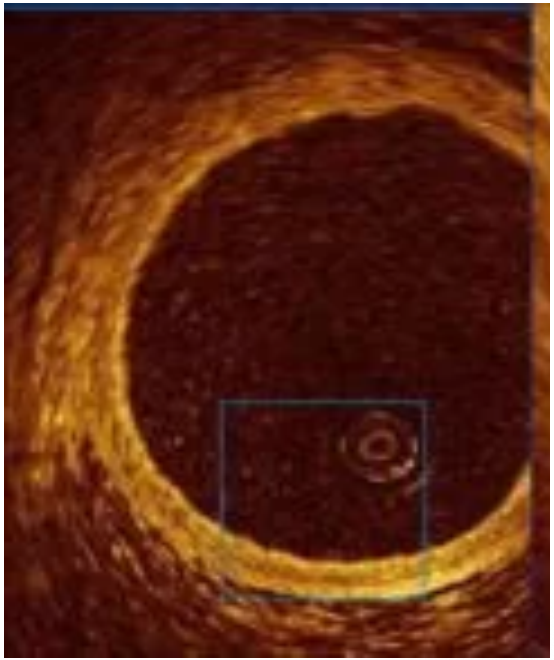
Background



Nature Review Cardiology (2017)

Study objective

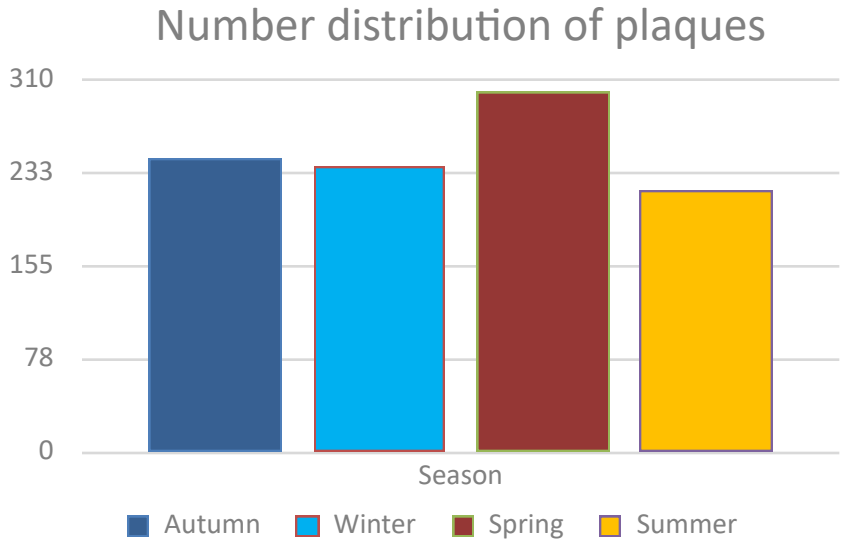
Analyse the characteristics of non-culprit coronary plaques in patients undergoing optical coherence tomography evaluation (OCT) evaluation of the left anterior descending artery (LVA)

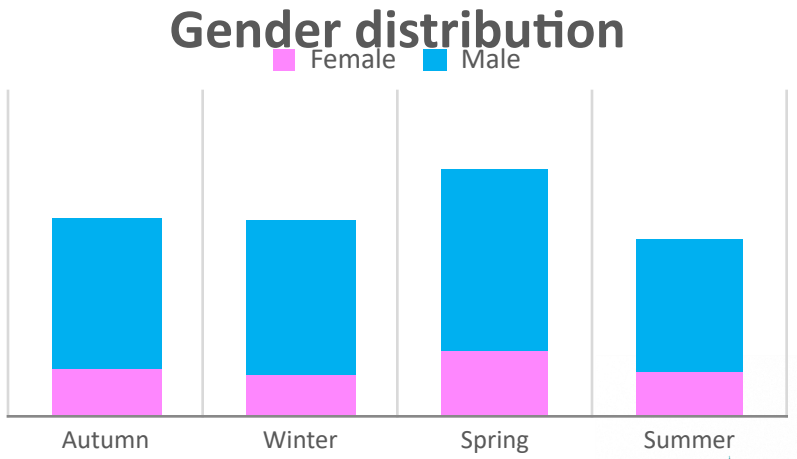


Methods

We included 1848 non-culprit coronary plaques from 1003 patients of the CLIMA registry.

The season of OCT pullback acquisition was collected for each patient.





Result

	Overall (n=1003)	Autumn (n=244)	Winter (n=239)	Spring (n=301)	Summer (n=219)	P
Age (y)	64.76±12.16	64.65±12.30	63.84±12.99	64.83±11.55	65.78±11.87	0.401
Age > 65 years (%)	536 (53.4)	124 (50.8)	123 (51.5)	167 (55.5)	122 (55.7)	0.571
Women (%)	247 (24.6)	58 (23.8)	52 (21.8)	81 (26.9)	56 (25.6)	0.550
Body Mass Index (kg/m²)	26.57±4.13	26.67±4.17	26.83±4.32	26.49±4.14	26.26±4.13	0.637
Left ventricular ejection fraction (%)	52.87±9.56	53.34±9.34	51.79±9.94	52.61±9.71	53.93±9.09	0.143
C-reactive protein ≥ 2mg/L (%)	478 (69.4)	129 (72.1)	117 (69.6)	139 (69.8)	93 (65.0)	0.592
PCR (mg/L)	11.52±22.12	13.69±24.30	12.38±23.09	10.81±24.08	8.80±13.37	0.227
LDL ≥ 70 mg/dl (%)	664 (85.2)	167 (86.1)	159 (85.0)	196 (86.7)	142 (82.6)	0.683
LDL ≥ 100 mg/dl (%)	802 (98.6)	202 (99.0)	195 (98.5)	231 (98.3)	174 (98.9)	0.913
Total cholesterol (mg/dl)	179.81±42.35	177.23±41.36	180.08±44.51	182.30±40.62	179.18±43.41	0.655
LDL Cholesterol (mg/dl)	111.93±38.62	108.14±36.11	112.41±40.26	115.03±38.84	111.60±39.21	0.339
Haemoglobin (mg/dl)	13.68±1,64	13.64±1.74	13.87±1.53	13.65±1.58	13.53±1.70	0.207
Platelets at admission (n)	234.55±76.05	234.13±72.23	235.76±68.23	238.08±82.08	228.90±80.11	0.640
Creatinine basal (mg/dl)	0.98±0.44	1.00±0.65	0.95±0.36	0.98±0.36	0.99±0.29	0.682
Current smoker (%)	720 (72.1)	68 (28.1)	70 (29.4)	85 (28.3)	56 (25.6)	0.827
Hypertension (%)	678 (67.9)	168 (69.4)	163 (68.5)	216 (72.0)	131 (59.85)	0.627

Result

	Overall (n=1003)	Autumn (n=244)	Winter (n=239)	Spring (n=301)	Summer (n=219)	P
Dyslipidemia (%)	606 (60.7)	144 (59.5)	146 (61.3)	190 (63.3)	126 (57.5)	0.557
Coronary artery disease family history (%)	246 (24.6)	51 (21.1)	52 (21.8)	92 (30.7)	51 (23.3)	0.033
Chronic kidney disease MDRD (%)	143 (15.5)	38 (15.9)	24 (10.5)	58 (19.4)	31 (14.8)	0.057
Diabetes (%)	223 (22.3)	60 (24.8)	45 (18.9)	70 (23.3)	48 (21.9)	0.449
Insulin treatment (%)	46 (4.6)	14 (5.8)	7 (2.9)	14 (4.7)	11 (5.0)	0.502
Glycated Haemoglobin (%)	6.26±1.12	6.18±1.12	6.21±0.97	6.29±1.15	6.39±1.20	0.754
Acute coronary syndrome on admission (%)	536 (53.4)	140 (57.4)	132 (55.2)	155 (51.5)	109 (49.8)	0.325
MI (%)	398 (39.7)	110 (45.1)	99 (41.4)	109 (36.2)	80 (36.5)	0.127
STEMI (%)	199 (19.8)	53 (21.7)	50 (20.9)	56 (18.6)	40 (18.3)	0.718
NSTEMI (%)	199 (19.8)	57 (23.4)	49 (20.5)	53 (17.6)	40 (18.3)	0.354
Unstable angina (%)	137 (13.7)	29 (11.9)	33 (13.8)	46 (15.3)	29 (13.2)	0.715
LAD culprit vessel (%)	546 (54.4)	143 (58.6)	136 (56.9)	150 (49.8)	117 (53.4)	0.175
Two Vessel disease (%)	297 (29.6)	68 (27.9)	78 (32.6)	93 (30.9)	58 (26.5)	0.445
Three vessels disease (%)	159 (15.9)	29 (11.9)	33 (14.0)	65 (20.9)	32 (14.8)	0.029

Result

	Overall (n=1685)	Autumn (n=426)	Winter (n=395)	Spring (n=493)	Summer (n=373)	P
Minimum lumen area (mm²)	5.50±3.03	5.36±2.79	5.70±3.21	5.73±3.15	5.17±2.89	0.02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fibrous cap thickness (μm)	8.92±8.20	8.86±8.65	8.95±7.88	9.26±7.85	8.50±8.46	0.614
Fibrous cap thickness <75 μm (%)	206 (12.2)	50 (11.7)	52 (13.2)	56 (11.4)	48 (12.9)	0.814
Fibrous cap thickness MIN (μm)	125.06±54.31	124.41±51.75	121.48±50.15	127.14±58.28	126.82±55.92	0.409
Maximum lipid arc (°)	153.52±68.71	150.30±65.27	151.64±69.33	156.88±71.97	154.74±67.50	0.471
Maximum lipid arc >180° (%)	481 (28.5)	125 (29.3)	105 (26.6)	150 (30.4)	101 (27.2)	0.565
Macrophages (%)	749 (44.5)	178 (41.8)	182 (46.2)	227 (46.0)	162 (43.5)	0.505
Cholesterol crystal (%)	219 (13.0)	57 (13.4)	62 (15.7)	66 (13.4)	34 (9.2)	0.056

Result

	Overall (n=1003)	Autumn (n=244)	Winter (n=239)	Spring (n=301)	Summer (n=219)	P
4 OCT criteria 3,5mm2 + 180 + 75µm + M (%)	36 (3.6)	9 (3.79)	9 (3.8)	10 (3.3)	8 (3.7)	0.993
Macrophage arc >67° (%)	281 (28)	65 (26.6)	70 (29.3)	91 (30.2)	55 (25.1)	0.558
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Calcified nodules (%)	183 (18.2)	50 (20.5)	44 (18.4)	53 (17.6)	36 (16.4)	0.708
Intra-plaque intimal vasculature (%)	**518 (51.6)**	**143 (58.6)**	**112 (46.9)**	**169 (56.1)**	**94 (42.9)**	**0.001**
Ulcerated plaque (%)	74 (7.4)	14 (5.7)	16 (6.7)	21 (7.0)	23 (10.5)	0.229
fl mo arco >67 (%)	281 (28.0)	65 (26.6)	70 (29.3)	91 (30.2)	55 (25.1)	0.558

Conclusion

- the geographical position and climatic variations influence the incidence of acute cardiovascular events, and determining a greater incidence of cardiovascular events in the winter periods.

- it is important to consider how climatic variations affect the composition of atherosclerotic plaques, allowing targeted and effective therapy

- Coronary plaques during summer had less local sign of inflammation such superficial macrophage infiltration and cholesterol crystals.

- Further studies are needed to confirm these results and investigate clinical implications