

Acute Myocardial Infarction and Protein-C Deficiency: Contribution of IVUS for optimizing treatment.

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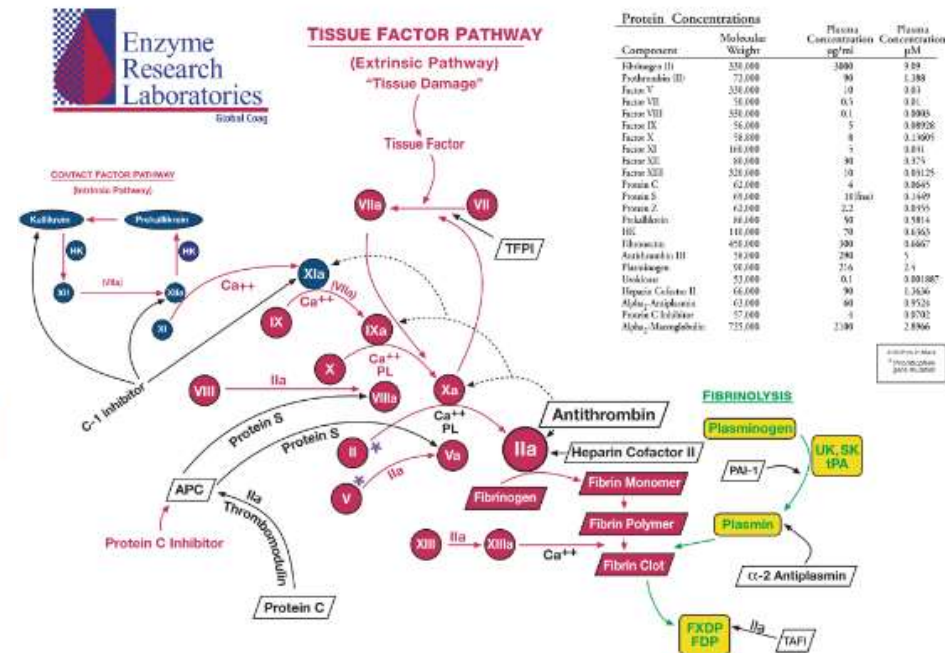
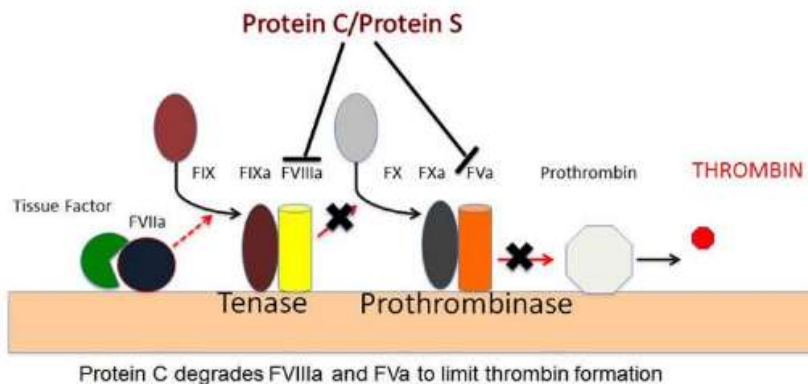
Rennes; FRANCE



Background

- Protein C deficiency is a disorder in the coagulation cascade that results in venous thromboembolism in most cases but also a possible contributor to arterial thrombosis.

Protein C Anticoagulant Action



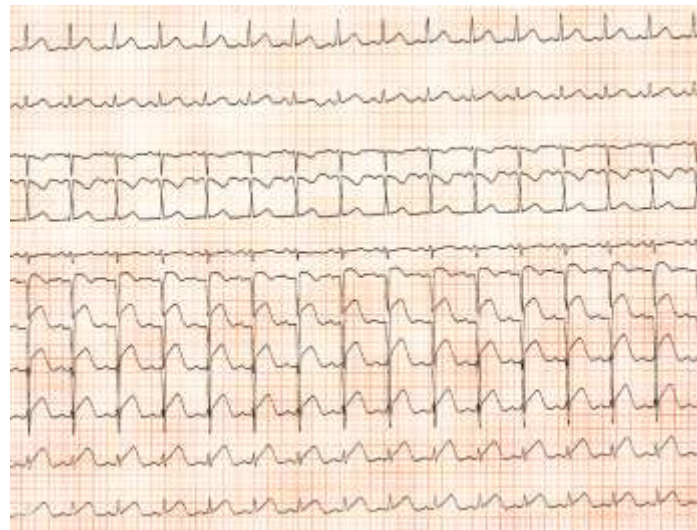
Clinical Presentation (1)

- Man 39 years old
- No risk factor (no drug abuse)
- Practicing sports cycling (each week end)
- Notion of familial Protein C deficiency (mother, brother with pulmonary embolism)
- A measurement of the Protein C (in an other center 20 years ago shows around 50%) No treatment because free of symptoms

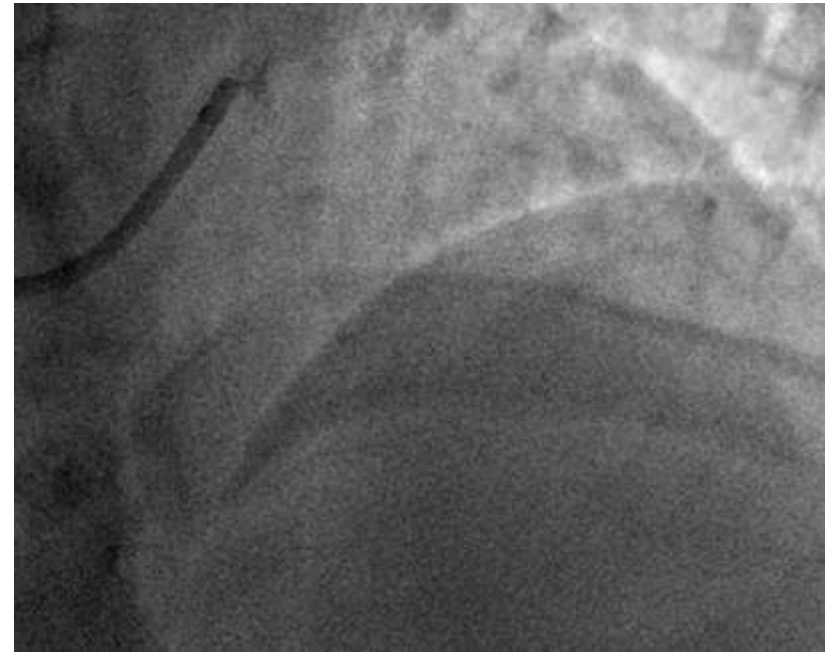
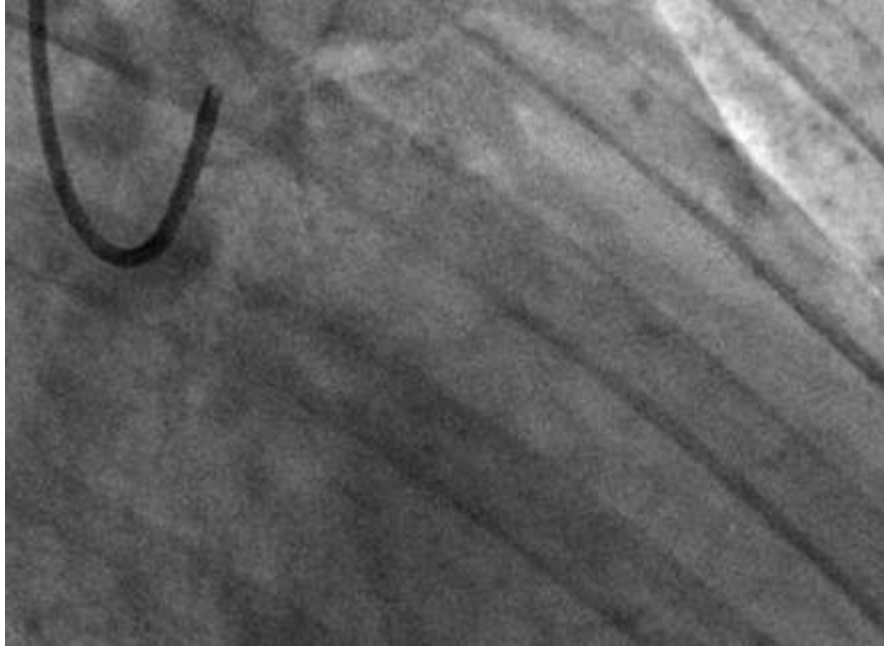


Clinical Presentation (2)

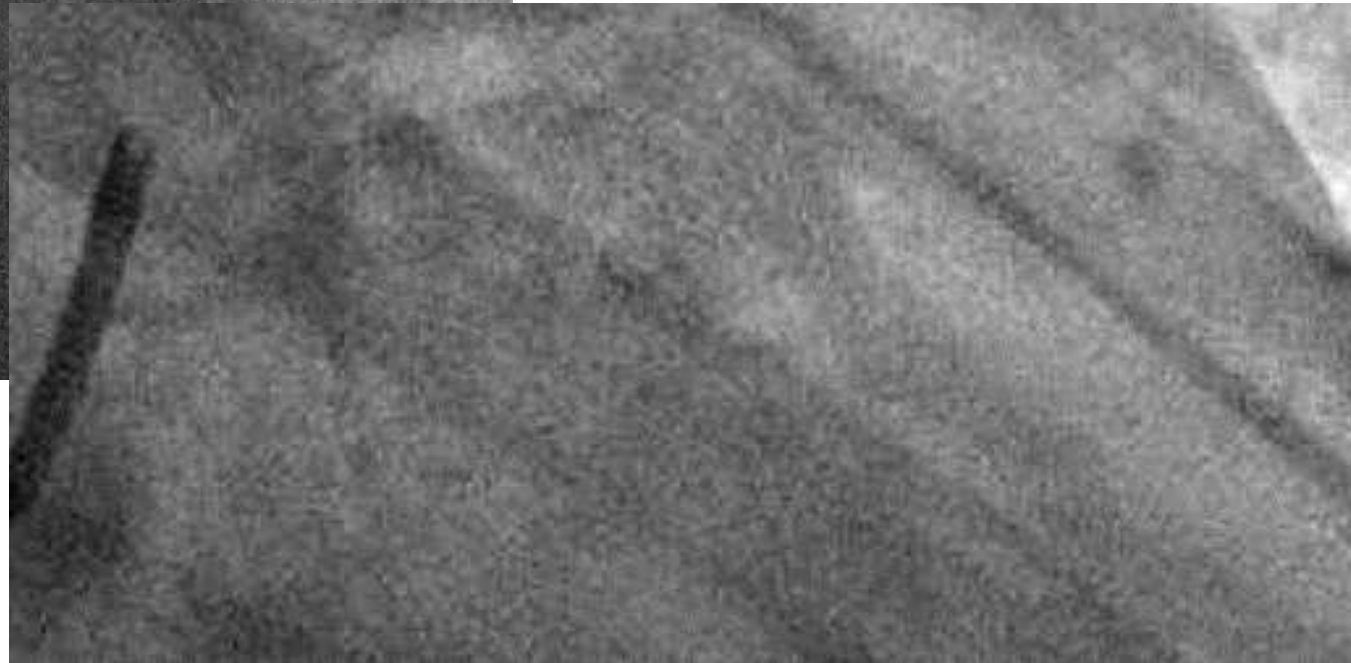
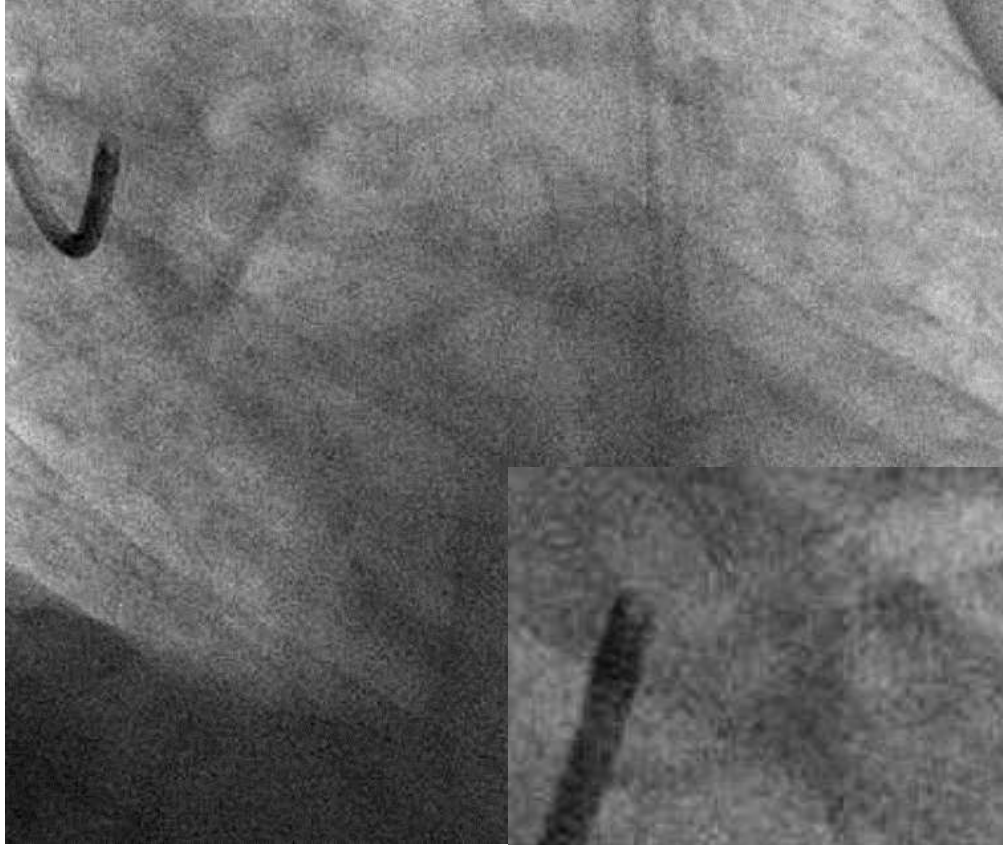
- June 2015: 3 typical chest pain
- Emergency Hospitalization because the last were prolonged
- ECG confirm diagnosis of Acute MI
- Aspirin, Prazugrel, Heparin



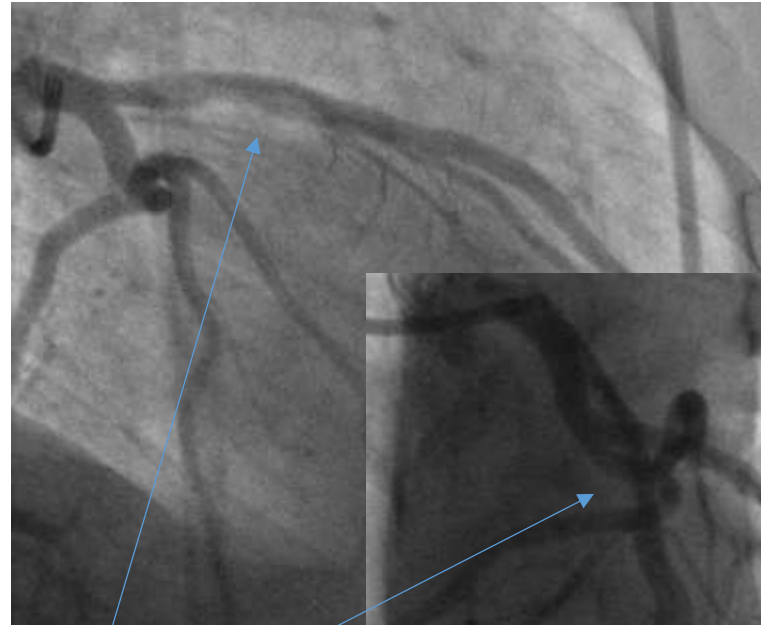
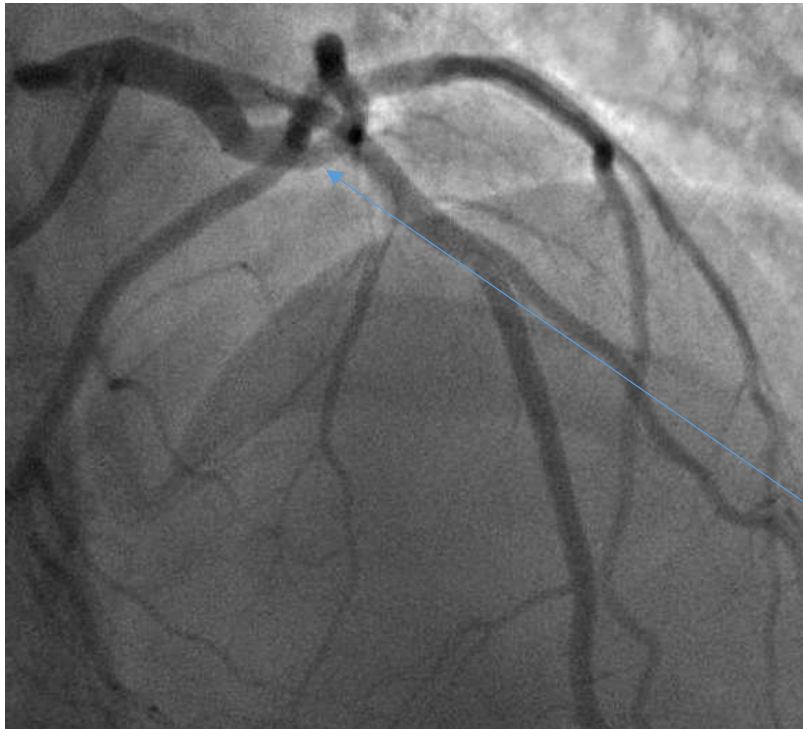
Urgent Coronary Angiogram



Urgent coronary angiogram



What do we do?



Thrombus LAD



Hypothesis and Treatment

- AMI in relationship with Protein C deficiency
- But Variability in the results of dosage
 - (50% in the past, 70 and 63% during hospitalization...)
- Screening for antiphospholipid antibodies was negative.
- Antithrombin was 97% (normal 80 - 120%),
- Treatment
 - Heparin
 - Aspirin-Prazugrel
- Discussion of indication of AVK...



Our strategy (and reflexion)

- Protein C Deficiency and arterial thrombosis is uncommon and controversial
- New coronary angiogram (after 1 week of heparin treatment) with IVUS.



Don't forget the "history"

JACC Vol. 25, No. 7
June 1995:1479-85

1479

CLINICAL STUDIES

CORONARY ARTERY DISEASE

Atherosclerosis in Angiographically "Normal" Coronary Artery Reference Segments: An Intravascular Ultrasound Study With Clinical Correlations

GARY S. MINTZ, MD, FACC, JACK A. PAINTER, MD, AUGUSTO D. PICHARD, MD, FACC, KENNETH M. KENT, MD, PhD, FACC, LOWELL F. SATLER, MD, FACC, JEFFREY J. POPMA, MD, FACC, YA CHIEN CHUANG, PhD, THERESA A. BUCHER, RN, LISA E. SOKOLOWICZ, BA, MARTIN B. LEON, MD, FACC

Results. Only 60 (6.8%) of 884 angiographically normal reference segments were normal by intravascular ultrasound. Reference segment percent cross-sectional narrowing measured $51 \pm$

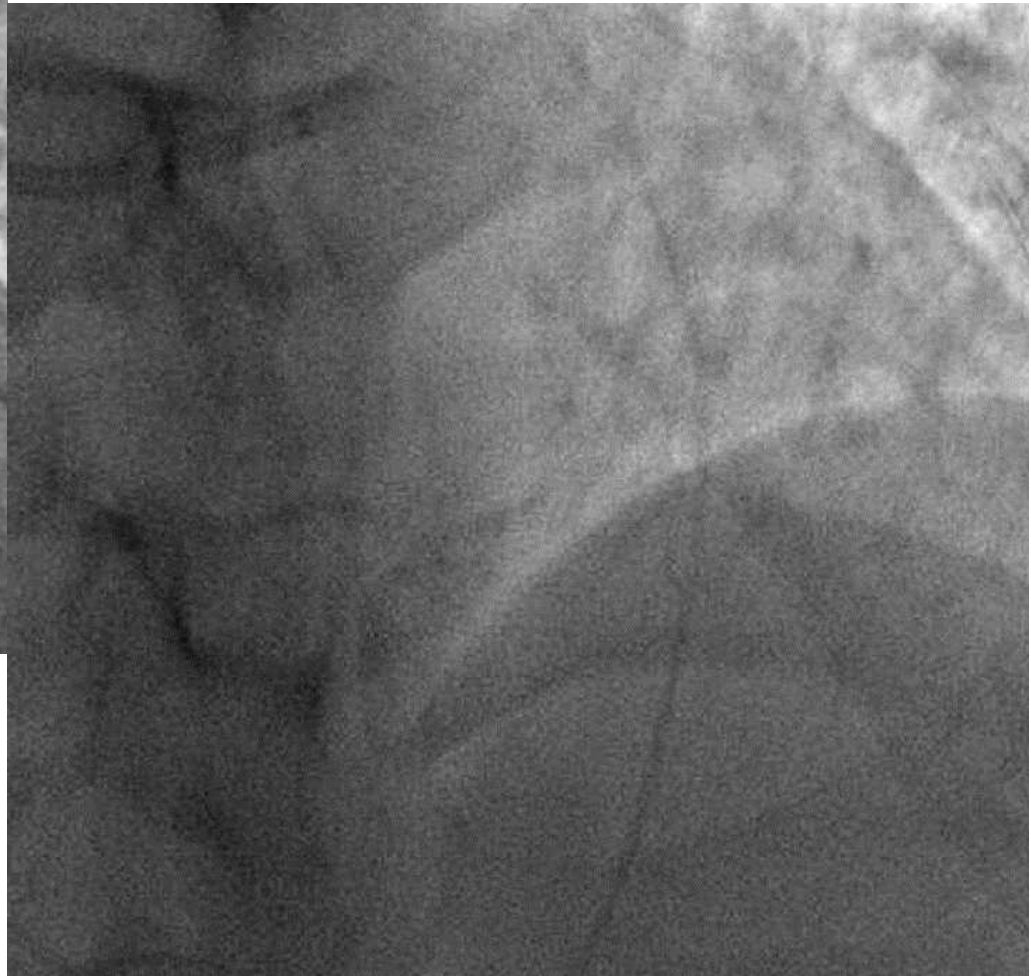
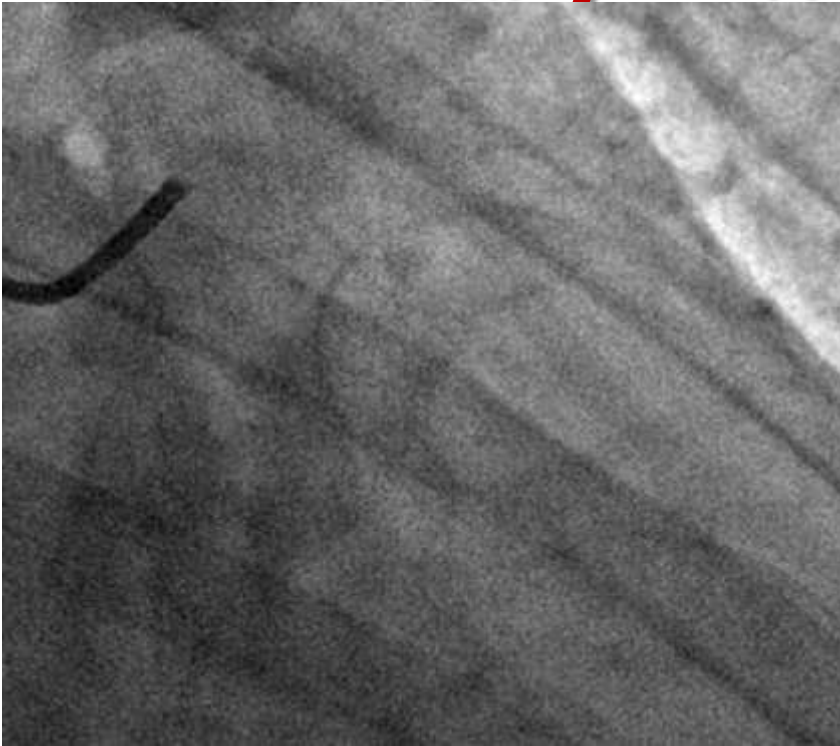
percent cross-sectional narrowing measured 51 \pm 13% and correlated poorly with the target lesion percent cross-sectional narrowing ($r = 0.166$, $p < 0.0001$). Reference segments

patients evaluated for transcatheter therapy for symptomatic native coronary artery disease. The reference segment was the most visually normal intravascular ultrasound cross section within 10 mm proximal to the target lesion but distal to any major side branch. Results are presented as mean value \pm 1 SD.

clinical events within 12 months of follow-up.

Conclusions. Atherosclerosis is ubiquitous in angiographically normal coronary artery reference segments. Reference segment disease parallels the severity of target lesion disease and is associated with many of the conventional risk factors for coronary artery disease. Because of its sensitivity in detecting atherosclerosis in angiographically normal reference segments, intravascular ultrasound should enhance the study of risk factors for atherosclerosis and the results of therapies to control disease progression.

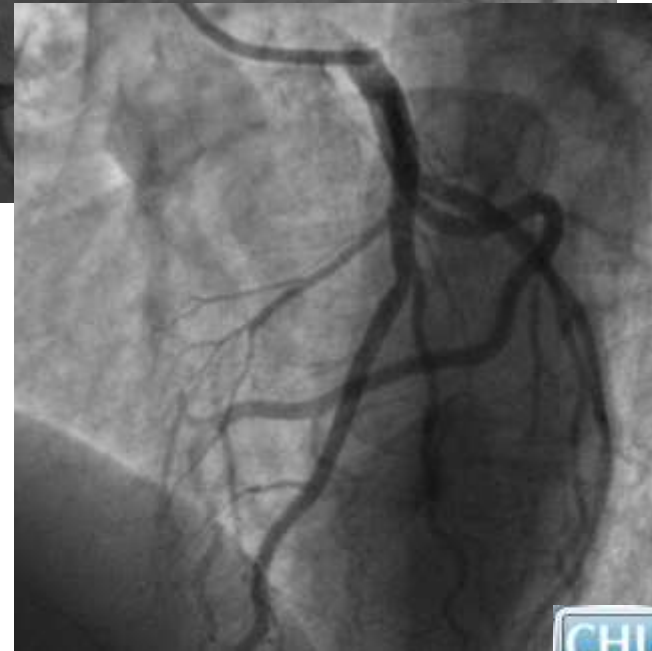
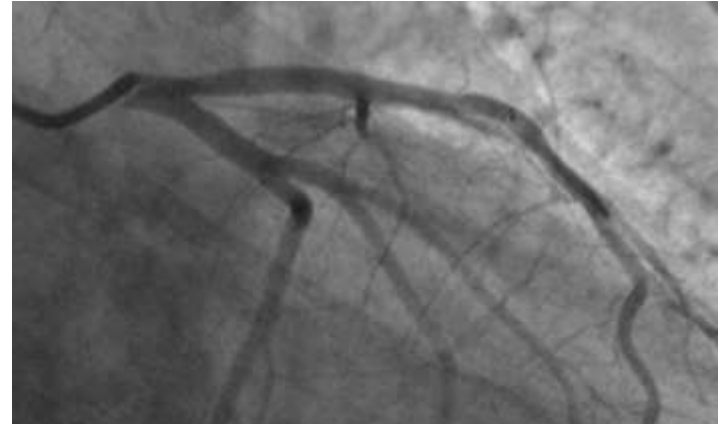
Coronary Angiogram (2)



Coronary Angiogram (2)



Total regression
of the Thrombus

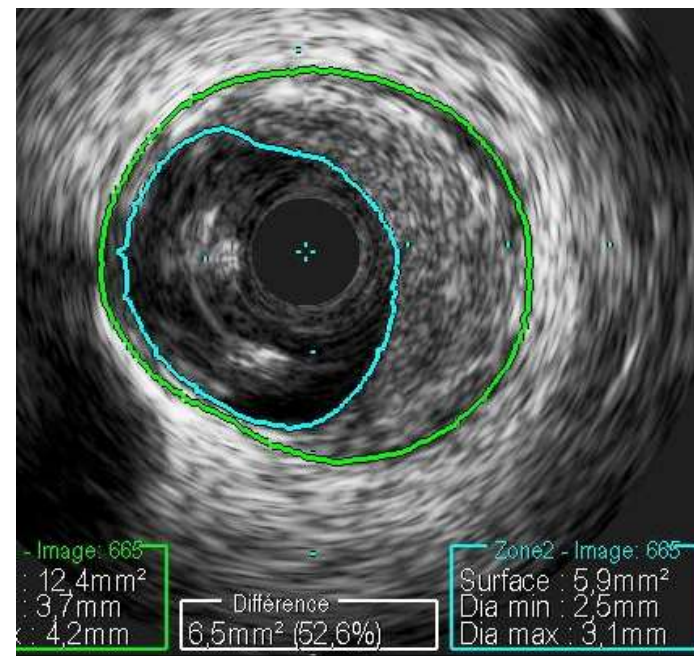
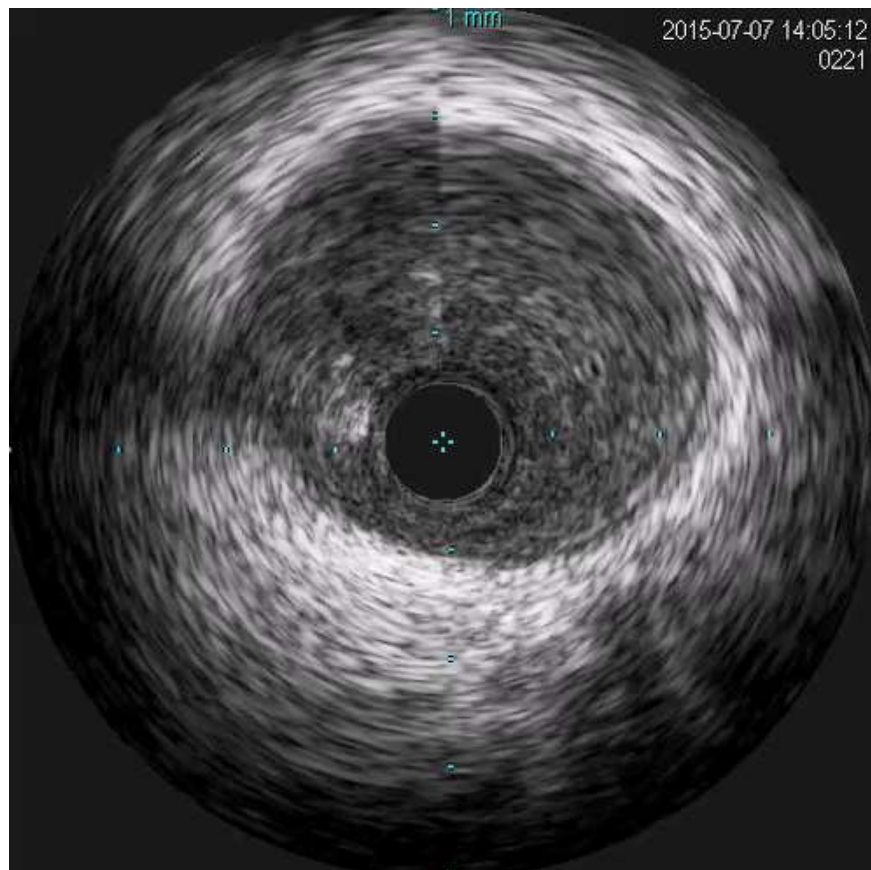


Regarding Coronary angiogram

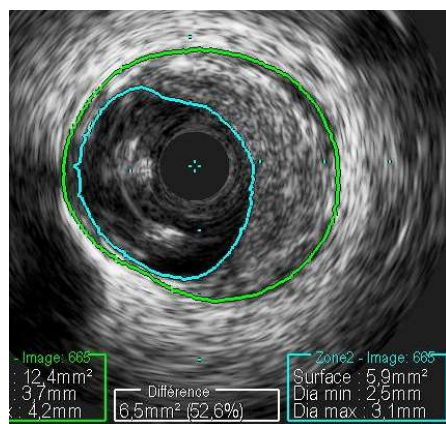
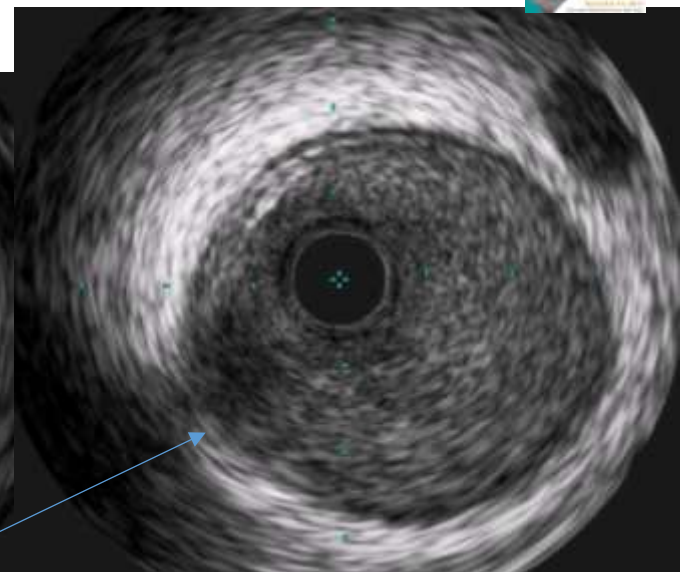
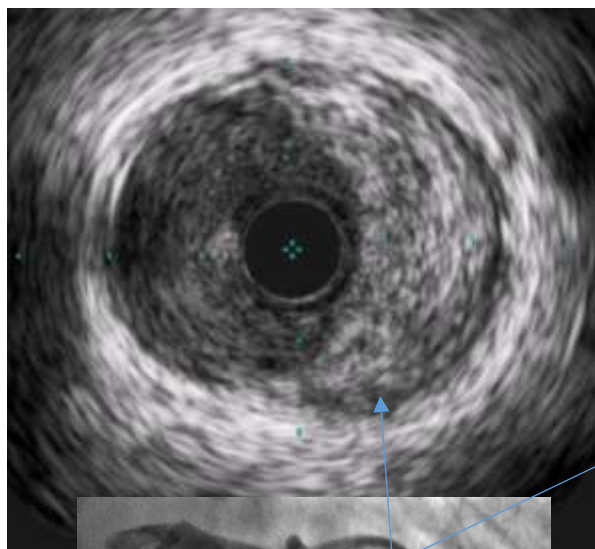
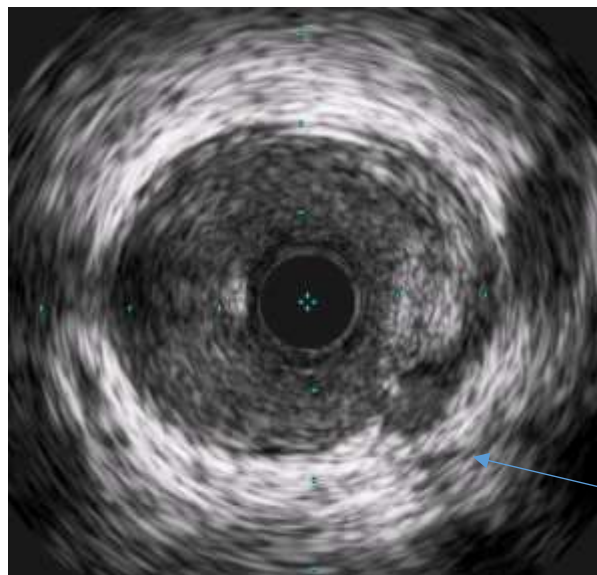
- Deficiency of C-protein is the main cause of the acute MI (although the % is more than 50%)
- Indication of anticoagulation treatment for life!!!
- Regarding the association with AAP???
- But are we sure that the coronary artery is strictly normal???



IVUS



IVUS



Ivus confirm diagnosis of plaque rupture with persistence of a mild lesion



Discussion and Conclusion (1)

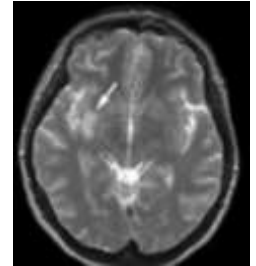
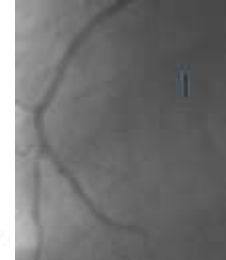
- Some cases describe the association of Protein C deficiency and AMI

CASE REPORT

Protein C deficiency manifesting as an acute myocardial infarction and ischaemic stroke

I Y Tiong, M L Alkotob, S Ghaffari

Heart 2003;89:e7 (<http://www.heartjnl.com/cgi/content/full/89/2/e7>)



Hereditary Deficiency of Protein C or Protein S Confers Increased Risk of Arterial Thromboembolic Events at a Young Age

Results From a Large Family Cohort Study

Bakhtawar K. Mahmoodi, BSc; Jan-Leendert P. Brouwer, MD; Nic J.G.M. Veeger, MSc;
Jan van der Meer, MD, PhD

Conclusions—Compared with nondeficient family members, subjects with protein S or protein C deficiency but not antithrombin deficiency have a higher risk for ATE before 55 years of age that is independent of prior venous thromboembolism. (*Circulation*. 2008;118:1659-1667.)



Discussion and Conclusion (2)

- Regarding these results our strategy was to privilege Double AAP for one year (with Statin) than to introduce an anticoagulation treatment for life
- This case confirm (if necessary?) in case of doubt of etiology of AMI: IVUS (or OCT) is very helpful on the strategy of treatment

