# Stable Chronic Angina in the 21st Century
A New Form of Coronary Artery Disease?

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Cardiovascular mortality has shown a significant decrease over the last decades,(1) mostly due to great advances in the knowledge of pathophysiology, control of coronary risk factors, advances in drug treatment and both diagnostic and therapeutic technological development.

This decrease has been more noticeable in the last few years, as shown by the data from the Registry of Coronary Artery Disease of England, with a decrease of near 36% since the three-year period of 1995-97 up to 2003-6, when it seemed it would reach 40% of decrease by the three-year period 2009-11, but reaching a 44% decrease by the end of 2007.(2) (Figure 1)
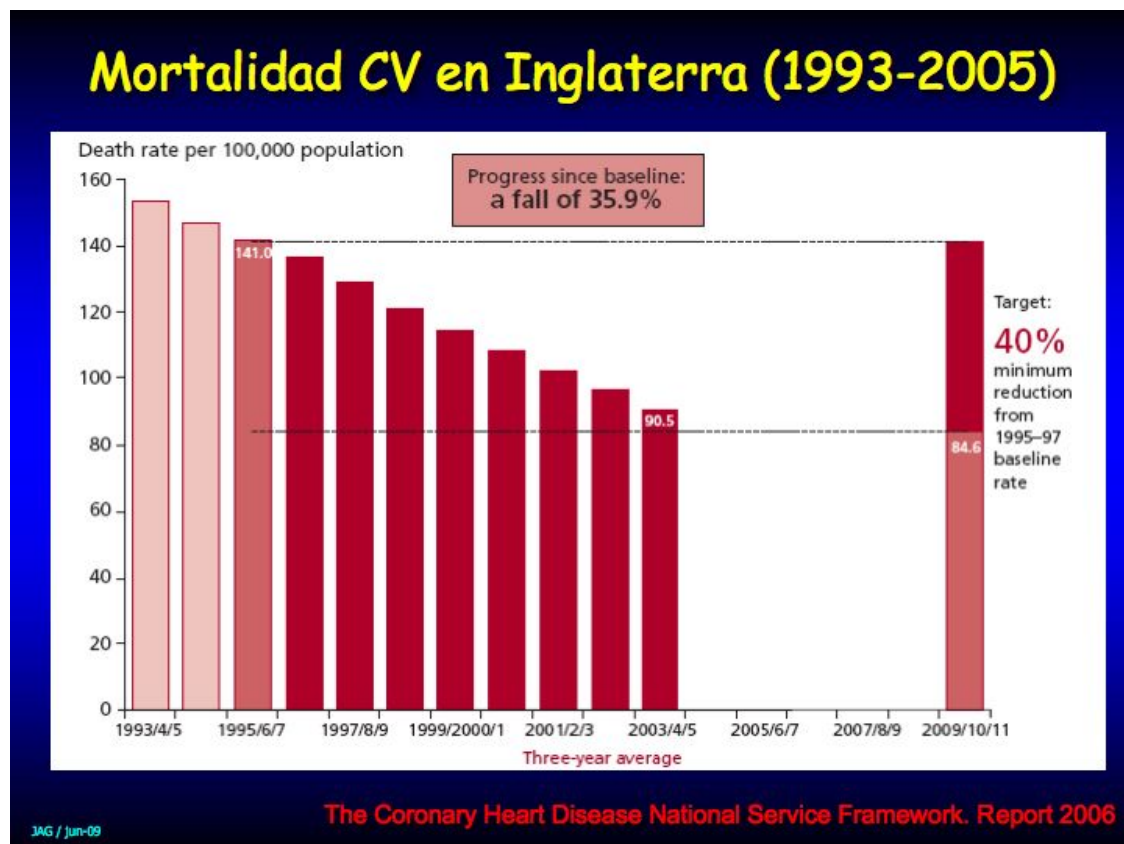
In spite of these great advances, cardiovascular disease is still the first cause of death in the western world (approximately 35%) above cancer (23%), accidents (6%) and chronic respiratory diseases.

Coronary artery disease (CAD) is responsible for more than 50% of cardiovascular deaths, followed by stroke (17%), heart failure (7%) and hypertension (7%).(3)

In our country, the results are similar. Since the 1980s, a 34% reduction has been observed in the cardiovascular mortality rate, although it is still by far the main cause of death.(4)

In this setting, a progressive increase is also observed in the hospital wards due to cardiovascular diseases, doubling the number since the 1970s until 2006.(3)

With this background, stable chronic angina, characterized by chest angina defined by a symptomatic pattern that remained invariable for at least the last 3 months, becomes relevant by how its prevalence and form of evolution have changed.

Chronic angina had a prevalence of approximately 3.5% with a yearly incidence of 400,000 new cases, an evolution toward acute myocardial infarction of 2% per year and a very low mortality in general (1.6% per year), although patients with moderate to severe impairment of left ventricular function (ejection fraction<35%) could reach a mortality of up to 3.3% per year.(5)

Since the 1960s the form of presentation of stable chronic angina has significantly changed. While in that time almost half of patients presented in functional class III-IV, by the end of the nineties only 10% of patients were in functional class III and there were virtually no patients with functional class IV angor.(6,7) (Figure 2)

Prevalencia de ACE
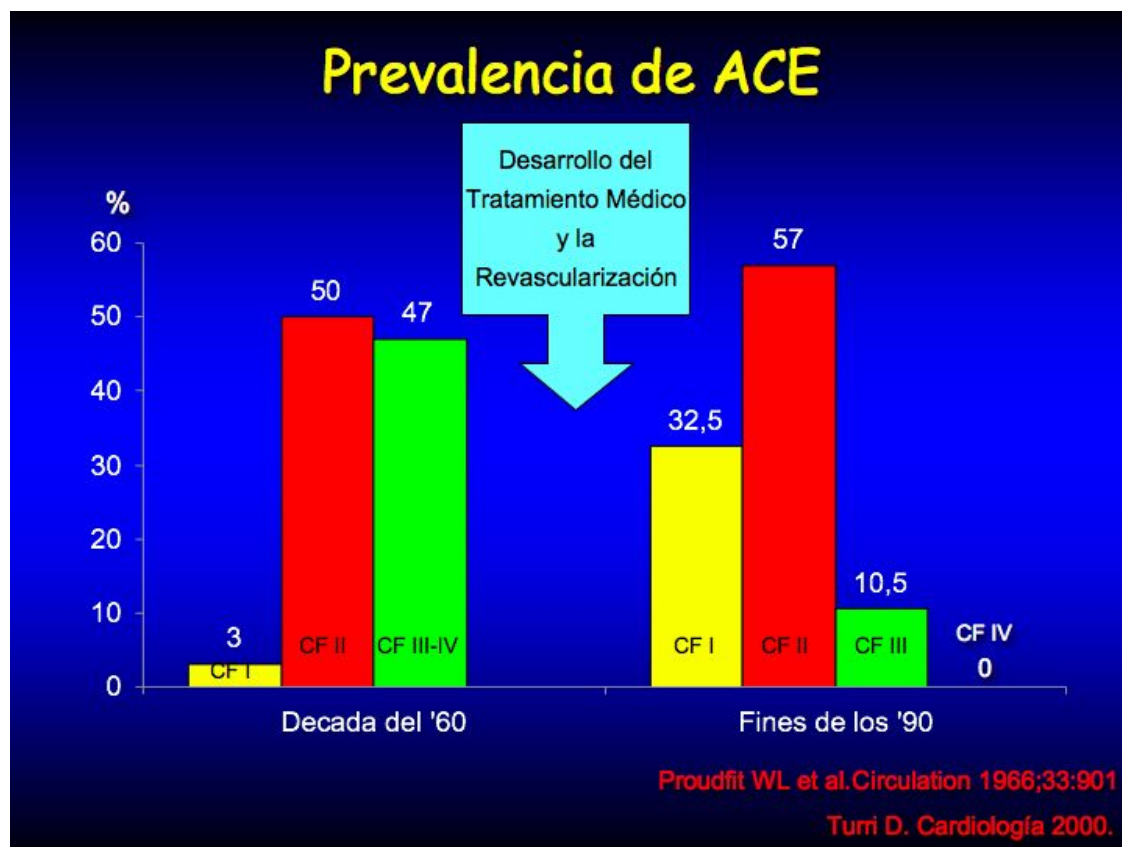
These changes are essentially due to the development of the drug treatment and mostly to coronary revascularization.

Since its appearance at the beginning of the 1980s, the use of coronary angioplasty has been growing gradually and significantly, overcoming even coronary artery bypass surgery up to 3 and 4 times the amount of procedures per year,(8) significantly enhancing the spectrum of its indications.

The registries of coronary angioplasty show that more than one third of the procedures are in stable patients. In our country, the CONAREC XIV Registry from year 2005 showed that the indication of coronary angioplasty was in patients in a stable situation in 36.3% of the cases, twice as much as what had been recorded in year 1996, when just 18.2% of the cases were stable.(9)

Interestingly, in this registry a significant reduction was observed in the use of functional tests prior to the procedure (53.9% in year 2005 vs 65.3% in year 1996, p<0.001) and more than 50% of the patients were asymptomatic, while just 20% of the functional tests had high risk criteria (vs 27.1% from year 1996, p=0.013).

These data are similar to those observed in the USA according to Medicare data, where 55.5% of the patients that underwent angioplasty by stable coronary artery disease, did not have functional assessment over the 90 days prior to the procedure.(10) The reasons for not using this functional evaluation were multiple, and were mainly related to the female gender, an age above 85 years old, history of heart failure, prior catheterization, and also when the attending physician had more than 150 invasive procedures per year. On the contrary, the patients with precordial pain episodes had a greater probability of undergoing a prior functional assessment study.

Over the last few years, this has determined that nearly 60% of the patients who present to the office to be followed due to chronic CAD, recently underwent some revascularization procedure. (Argerich Hospital – Cardiology, unpublished data). (Figure 3)
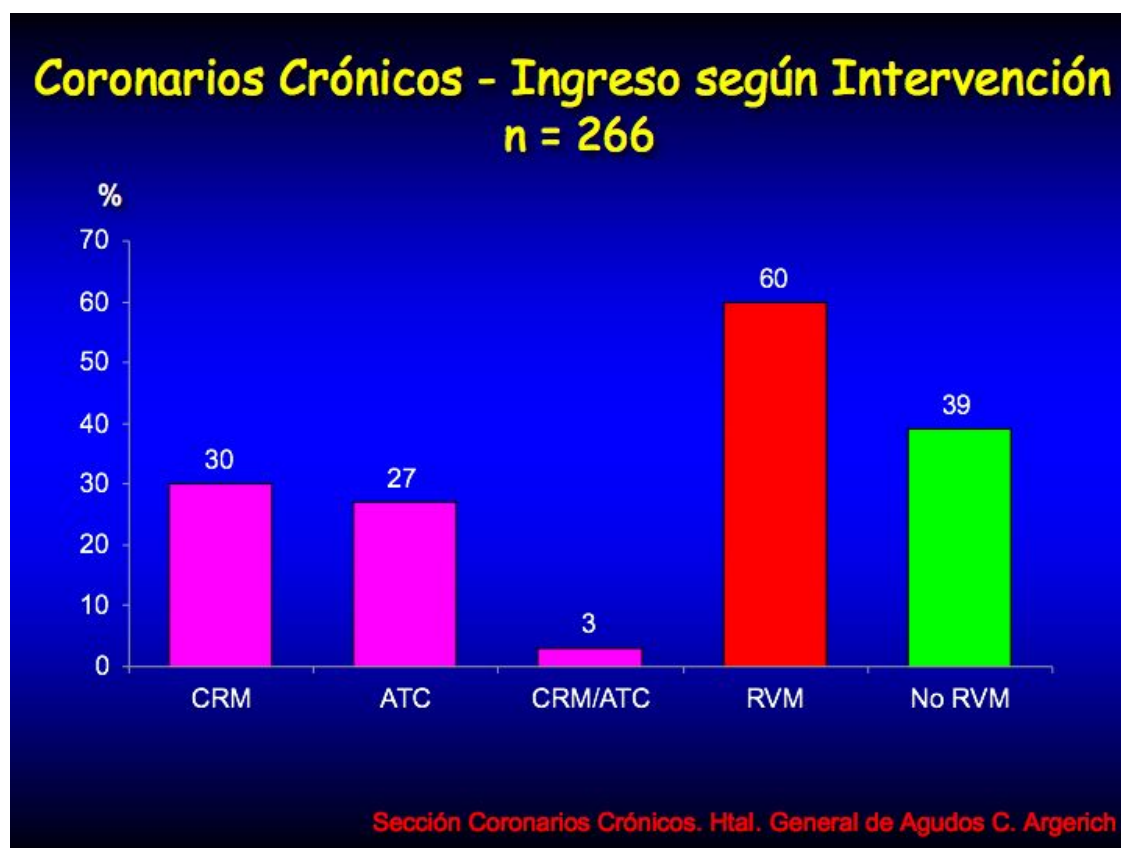

Simultaneously, as the effectiveness of the drug treatment advances, an increase has been observed in the indication and adherence to different drugs with a proven efficiency, such as aspirin (98% of patients receive it) and mostly statins, since 84% of chronic coronary patients receive it with a significant increase in comparison to 26% of

the patients that received them in year 2006 (Figure 4) (Argerich Hospital – Cardiology, unpublished data).
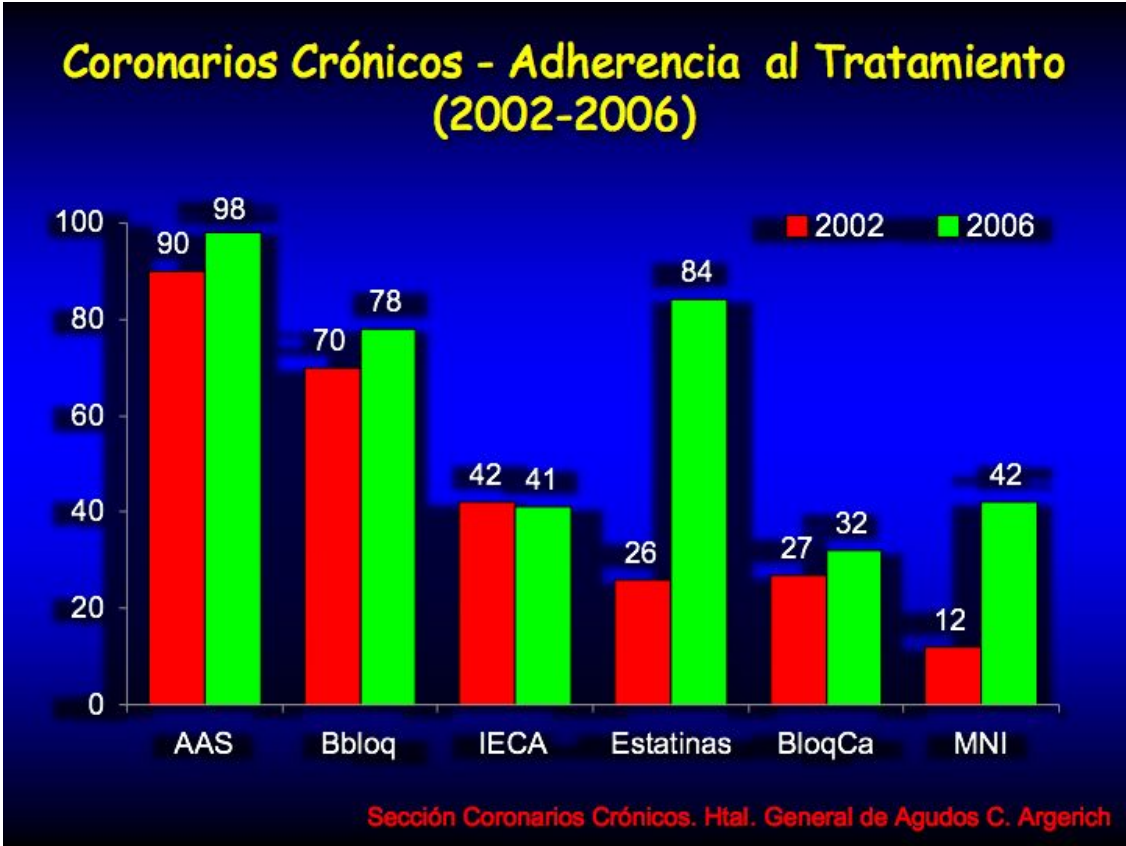

This evident advancement in the effectiveness of drug management becomes more evident from such clinical trials as the COURAGE study (11), that showed a mortality rate of 8.3% at 5 years for the arm with optimal drug treatment, significantly lower than the 15.8% shown by the drug treatment arm in the meta-analysis of drug management vs revascularization surgery studies made in the 1970s.(12) (Figure 5)

Tratamiento Médico vs Cirugía
Metaanálisis – Década del 70
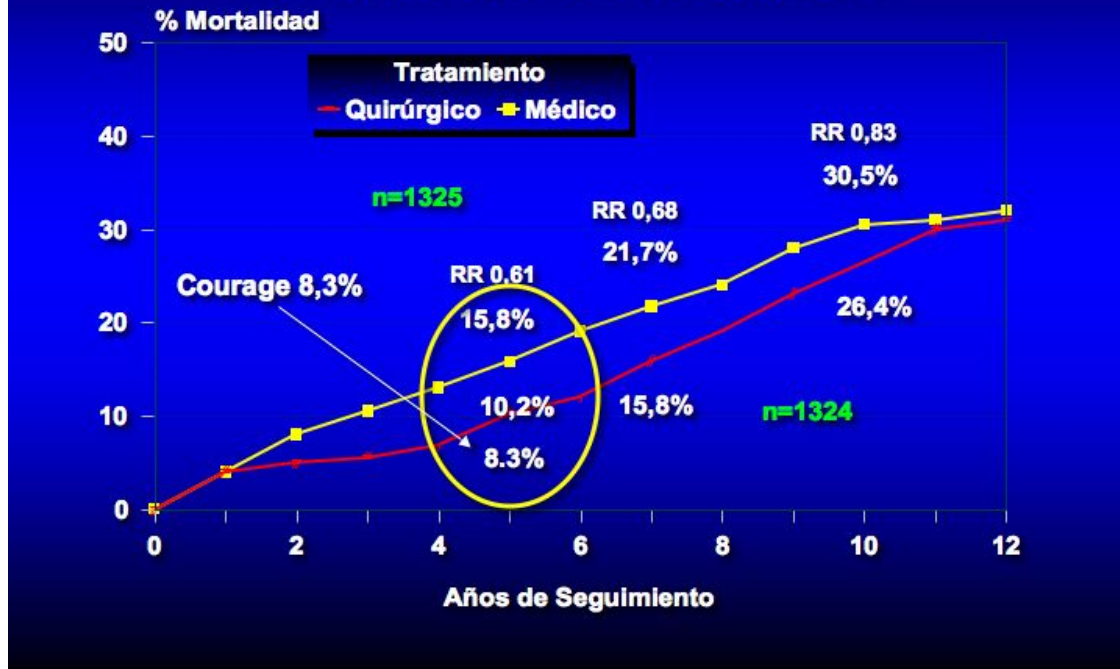
This leads us to reconsider the range of coronary artery disease. Initially conceived as isolated areas, starting from stable chronic angina and continuing by unstable angina in its different forms, and that finally ended with acute myocardial infarction of the Q wave type (Figure 6A); this changed with the appearance of biomarkers in the spectrum of diagnostic methods. The latter transformed these groups into a continuum of diseases, progressing according to the degree of necrosis and according to the level of the markers, and established the concept of acute coronary syndromes without ST segment elevation (to replace unstable angina) and with ST segment elevation to replace Q type infarction. (Figure 6B)
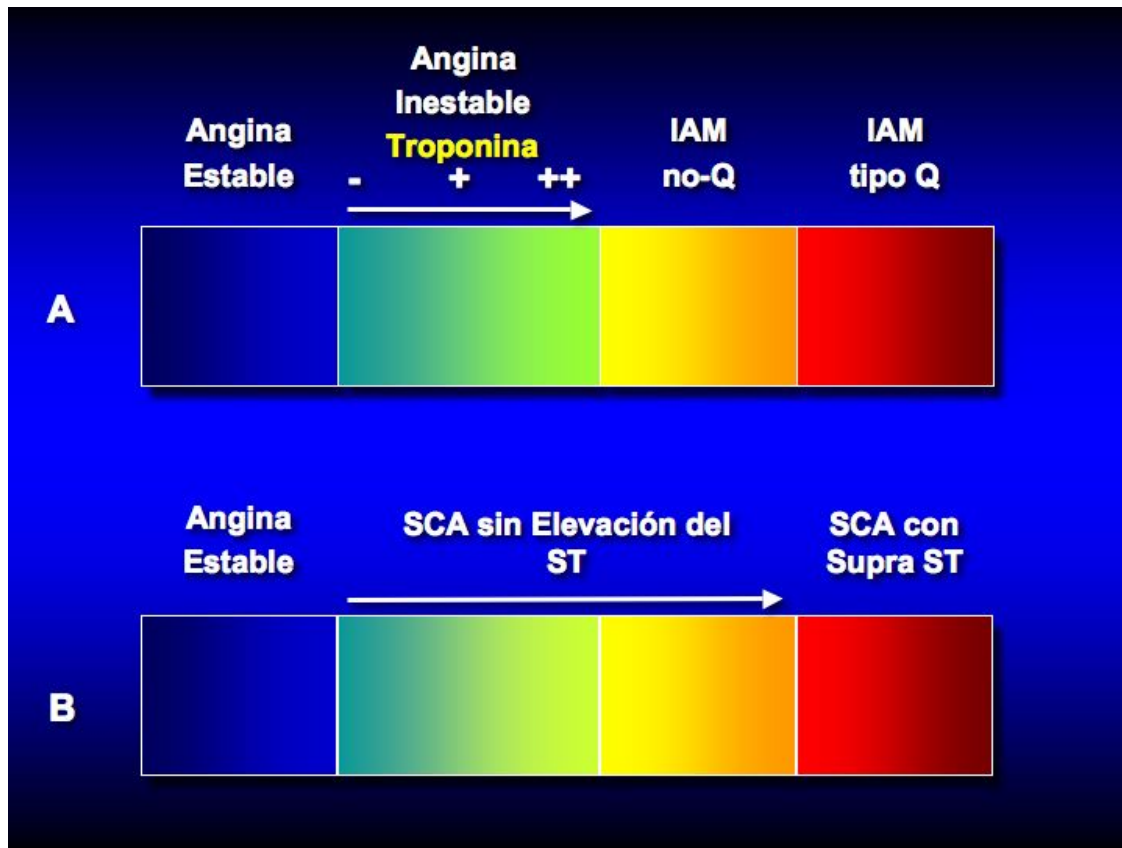
The increase of revascularization procedures and the development of medical management of these acute coronary syndromes has achieved the stabilization of these patients, who historically did not have a good prognosis. Thus, patients who had presented acute coronary syndrome and who undergo revascularization and are stabilized, become part of a new set of this range of CAD, chronic patients, in general totally asymptomatic. (Figure 6C)
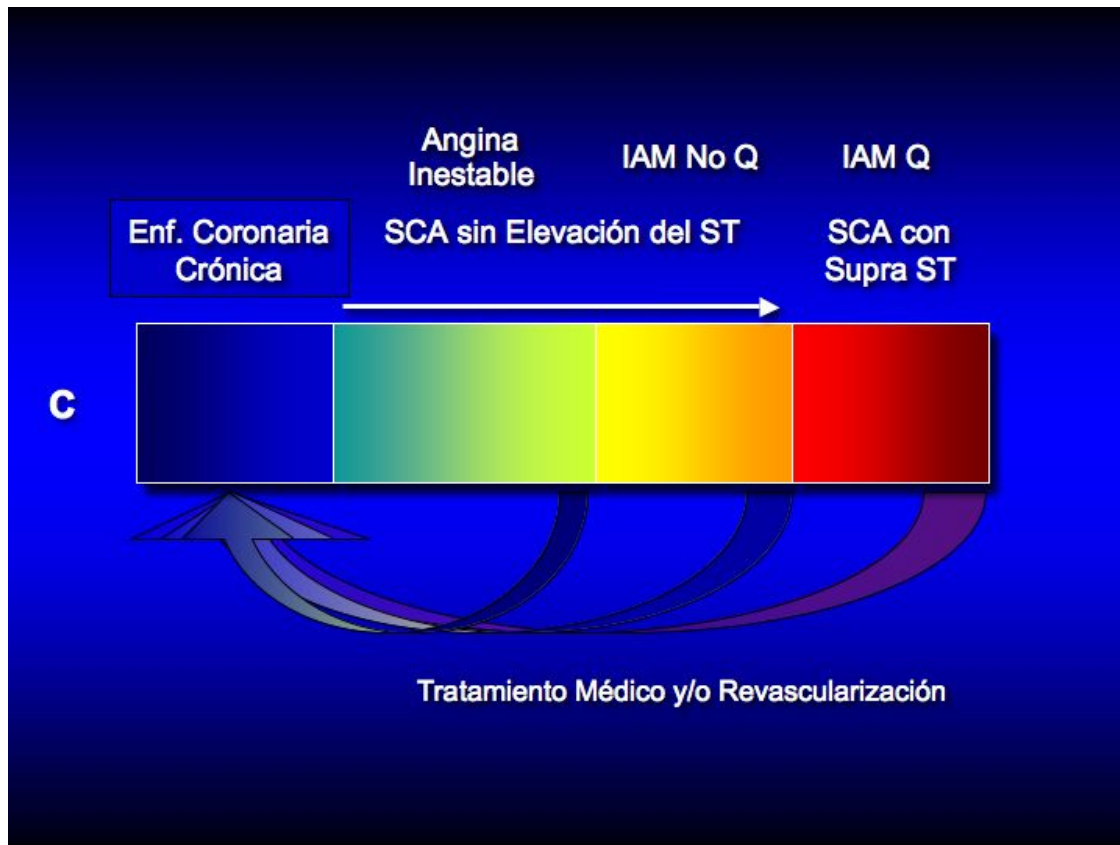
Here is where secondary prevention becomes relevant again, as well as a proper risk stratification through the evaluation of residual ventricular function, the extent and severity of coronary tree compromise, the general state of the patient, and the presence of co-morbidities, their age, the association of risk factors, not forgetting psycho-social factors, which have clearly proven to be related to the appearance of new events.(13-15)

In conclusion, over the last few years there have been significant changes in the form of presentation and evolution of patients with stable chronic angina. The development of coronary revascularization, early detection and intensive management of modifiable coronary risk factors, the development and dissemination of drug treatment with proved efficacy (aspirin, statins, ACEI, etc.), cardiovascular rehabilitation programs, and the information on the patients, all have positively influenced and virtually determined the disappearance of a classical form of presentation of coronary artery disease, such as stable chronic angina and the growth of an increasingly larger group, patients with asymptomatic chronic CAD.

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