

Clinical Research

Registration of Antithrombotic Policy for the Management of Acute Coronary Syndromes in the Greek Population

ANNA P. ANTONIOU, MARIA E. MARKETOU, ANTONIS HATZIZACHARIAS, IOANNIS FOTIADIS, GENOVEFA KOLOVOU, EFI SIMEONIDOU

On behalf of the Working Group on Cardiovascular Pharmacology and Drug Therapy

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Introduction: In this study an attempt was made for the first time in the Greek population to register the antithrombotic medication given to patients with acute coronary syndromes (ACS), both during their hospitalisation and on discharge.

Methods: The study was designed to include all patients with ACS in a total of 22 hospitals in Athens and other parts of Greece. An analysis was made of differences in the administration of antithrombotic agents in relation to region, sex and age.

Results: From the data recorded it emerged that patients in Athenian hospitals more often receive aspirin and heparin than do those in other regions. Also, women with acute myocardial infarction are given aspirin and platelet glycoprotein IIb/IIIa inhibitors less frequently than men. In addition, elderly patients with non-Q infarction and unstable angina are treated less often with clopidogrel than are younger patients.

Conclusions: A large number of patients with ACS do not receive antithrombotic medication in accordance with the guidelines. Furthermore, it appears that population groups who are considered to have higher risk and poorer prognosis, such as the elderly and women, are undertreated.

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Address:

Anna P. Antoniou

3 Papagianni St.,

115 21 Athens

Greece

e-mail:

anelyc@hotmail.com

Acute coronary syndromes (ACS) include a wide range of clinical conditions with differing pathophysiology and prognosis: unstable angina, non-Q infarction and infarction with ST-segment elevation. All these conditions, if undertreated and not managed in the optimum way, can lead to high morbidity and mortality.

Progress in the treatment of ACS and experience from large multicentre studies led to the drawing up of guidelines by the European Society of Cardiology and the American College of Cardiology, which steer the clinical cardiologist towards the best possible therapeutic handling of patients. It has been shown that patients with ACS who receive treatment in accordance with these evidence-based guidelines have a better outcome and lower mortality. However, previous studies in the international

literature have reported that the guidelines are applied less often and with more difficulty in population groups such as the elderly, women, and coloured patients.¹⁻³

Although the treatment of patients with ACS has been studied in countries of the Americas and Europe, some of which included data from Greece, there has been no report in the literature^{4,5} specifically analysing the antithrombotic policy for ACS patients in tertiary and secondary Greek hospitals.

The purpose of this study was to register the antithrombotic treatment of patients with ACS in Greece during their hospitalisation and on discharge.

Methods

The study was designed to include all patients who met the inclusion criteria in a to-

tal of 22 hospitals in Athens and other parts of Greece during the registration period. Hospitals of all types – secondary, tertiary and university – were selected so that the sample would be representative. The inclusion criterion was a diagnosis of ACS according to the guidelines of the European Society of Cardiology and the American College of Cardiology.⁶⁻⁸

The patients' data, including the admission diagnosis and the antithrombotic treatment given during hospitalisation and on discharge, were entered on special forms provided by the Working Group on Cardiac Pharmacology and Drug Therapy via the Hellenic Cardiological Society, to whom the forms were returned on their completion.

Details of clinical characteristics and treatment during hospitalisation were obtained from the patients' medical files. Differences in the administration of antithrombotic medication were analysed in relation to geographic region, sex and age. For the purposes of statistical analysis patients were divided into two age groups: ≤ 60 years and > 60 years old.

Statistical analysis

This was a prospective observational study. The initial statistical analysis was based on frequency distribution tables in relation to category variables, while for continuous variables central tendency indices were given. Correlations of drug treatment with diagnosis and with region were made using the χ^2 test. All tests were two-tailed and the level of statistical significance was 5%.

Results

Finally, 10 centres in different parts of Greece participated in the study, having responded to the proposal from the Working Group on Cardiac Pharmacology and Drug Therapy that these data should be recorded. The recording period was from 1st January to 31st March, 2003. A total of 367 patients were recorded, of whom 334 met the inclusion criteria (mean age 65 ± 12 years, 237 men) and had their data included in the study. A hundred and one patients were ≤ 60 years old.

Of the total patients included, 228 (68.3%) were from hospitals in Athens and 106 (31.7%) were from hospitals in other regions of Greece. The admission diagnosis was myocardial infarction with ST-segment elevation in 102 patients (30.5%), while the remainder had non-Q infarction and unstable angina. Eight deaths were recorded in patients over 70 years of age.

Three patients (0.89%) received no antithrombotic treatment during their hospitalisation and 24 (7.1%) were taking no such treatment on their discharge. Table 1 shows the total numbers of patients who were taking antiplatelet drugs and heparin during hospitalisation and on discharge.

It appears that during hospitalisation patients with a non-Q infarction and unstable angina are given aspirin and low molecular weight heparin more often in Athenian hospitals than in other regions (93.7% vs. 82.5% for aspirin, 86.9% vs. 59.6% for low molecular weight heparin, respectively; Figure 1). Regarding clopidogrel in patients with non-Q infarction and unstable angina there was no difference between Athens and the rest of Greece; however, the percentage of patients who received the drug was rather small ($\sim 50\%$). For patients with acute infarction and ST-segment elevation, a greater percentage were given unfractionated heparin and clopidogrel in Athens than in other regions of Greece (79.2% vs. 36.7% for heparin, 47.25% vs. 20.4% for clopidogrel, respectively). In contrast, hospitals outside Athens gave glycoprotein IIb/IIIa inhibitors more often (22.8% vs. 10.9%) to patients with non-Q infarction and unstable angina.

Women with acute infarction and ST-segment elevation received aspirin less often during their hospitalisation than did men (80% vs. 94.7%). Glycoprotein IIb/IIIa inhibitors were given only to a small percentage of patients with non-Q infarction and unstable angina, especially in the case of women (6.1% and 16.8% for women and men, respectively).

Elderly patients with non-Q infarction and unstable angina were treated less often with clopidogrel than were younger patients (42.1% vs. 61.5%, respectively).

Similar differences were seen in the treatment patients were given on their discharge from hospital (Figure 2). Only 68.2% of women with acute infarction were given aspirin, compared with 91.9% of men. Also, elderly patients with non-Q infarction and unstable angina were taking clopidogrel less often than younger patients (31.8% vs. 55.4%, respectively).

Finally, a small percentage of patients ($\sim 15\%$) had immediate coronary angiography and still fewer underwent an invasive procedure. This percentage was even smaller in patients aged over 60 years.

Discussion

This is the first study to attempt to record the policy for the administration of antithrombotic agents in the treat-

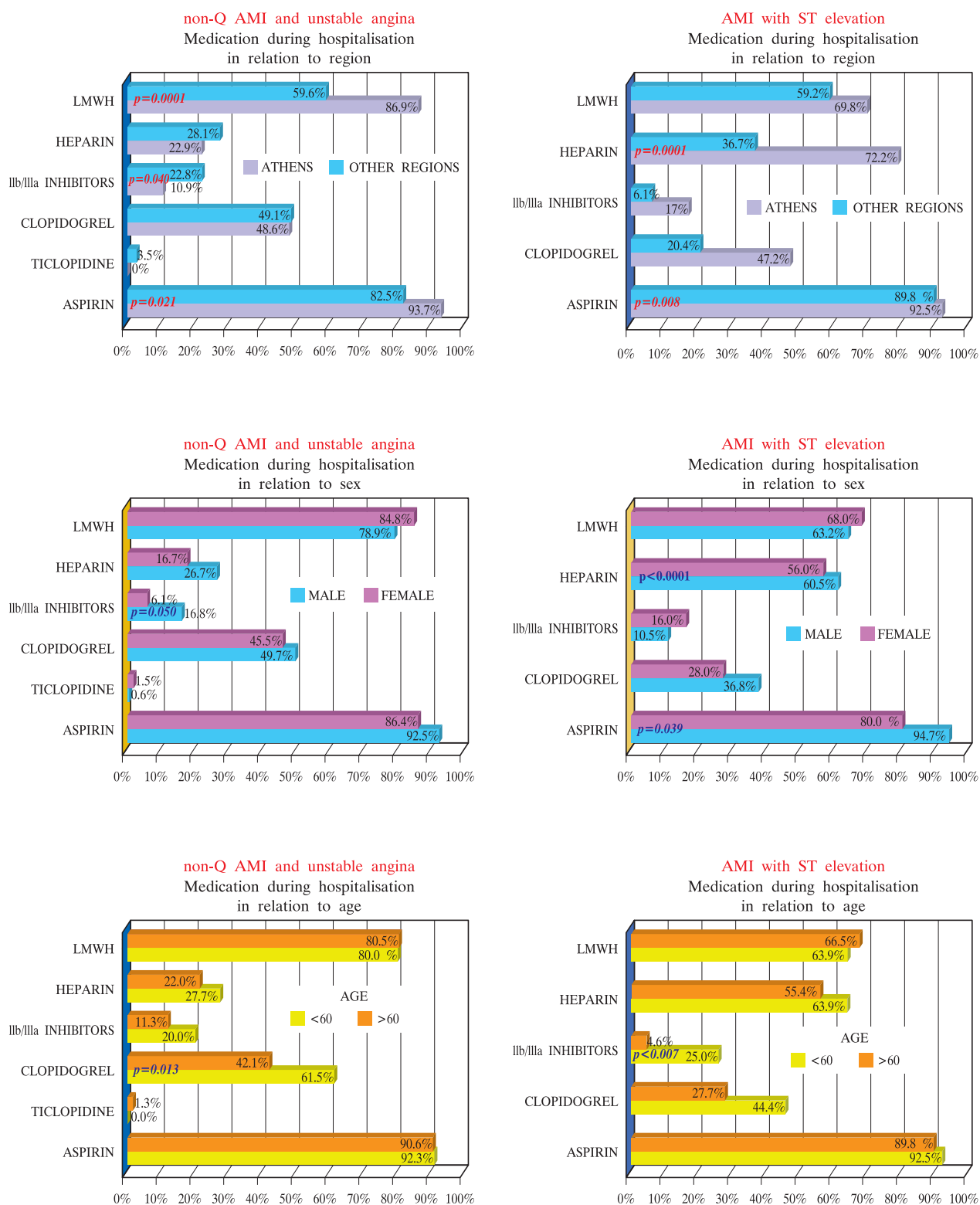


Figure 1. Antithrombotic treatment during hospitalisation in relation to geographic region, age and sex. AMI – acute myocardial infarction; LMWH – low molecular weight heparin.

ment of ACS in the Greek population. The conclusion that arises from our results is that a large percentage

of patients do not receive antithrombotic medication in accordance with the guidelines. It also appears that

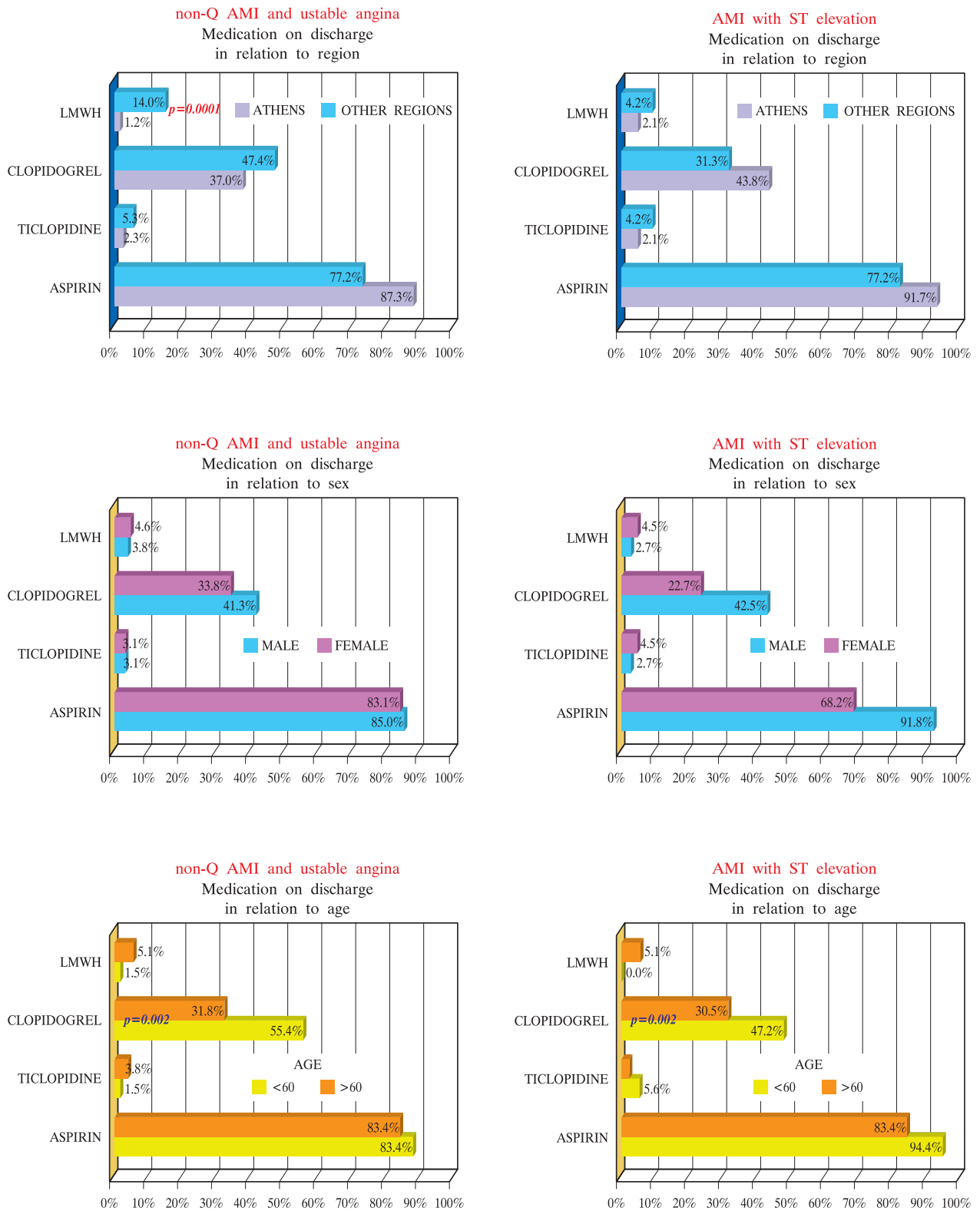


Figure 2. Antithrombotic treatment on discharge in relation to geographic region, age and sex. AMI – acute myocardial infarction; LMWH – low molecular weight heparin.

population groups considered to have a higher risk and a poorer prognosis are undertreated.

Following a multitude of therapeutic approaches, antiplatelet and anticoagulant drugs are the corner-

Table 1. Antithrombotic treatment during hospitalisation and on discharge.

	Hospitalisation		Discharge	
	AMI with ST-segment elevation	Non-Q, unstable angina	AMI with ST-segment elevation	Non-Q, unstable angina
Aspirin	93 (91.2%)	211 (90.9%)	83 (86.5%)	195 (84.8%)
Clopidogrel	35 (34.3%)	113 (48.7%)	36 (37.5%)	91 (39.6%)
Platelet glycoprotein IIb/IIIa inhibitors	12 (11.8%)	32 (13.8%)	–	–
Heparin	60 (58.8%)	56 (24.1%)	–	–
Low molecular weight heparin	66 (64.7%)	186 (80.2%)	3 (3.1%)	10 (4.3%)

AMI – acute myocardial infarction.

stone of treatment for ACS. Despite that, previous studies^{5,9,10} have also remarked that antithrombotic treatment is given less than would be expected in daily clinical practice. Even though our study shows that, at least in the case of clopidogrel and low molecular weight heparins, the percentage of patients with ACS who receive antithrombotic treatment in Greece is larger than the mean value for Europe, we must acknowledge that the relevant study, the Euro Heart Survey for ACS, took place during 2000-2001, while more recent data have not yet been confirmed.

More specifically, in the GRACE, Euro Heart Survey and ENACT studies, aspirin was given to 92%, 93% and 96% of patients, respectively. Those percentages are similar to our own findings for aspirin administration. In contrast, the rates of administration of low molecular weight heparin to patients with acute infarction and ST-segment elevation are lower than our own results, which range around 65%. The values recorded in the ENACT and GRACE studies were 34% and 41%, respectively, while in the Euro Heart Survey low molecular weight heparin was given in 47.8% of cases. Also notable, as regards the data concerning Greece, are the differences in the administration of antithrombotic medication for non-Q myocardial infarction and unstable angina between our study and the previous studies in which data from Greece were included.⁵ Thus, according to the Greek data of the ENACT study, low molecular weight heparin was administered to 65% of all unstable angina patients and a glycoprotein IIb/IIIa inhibitor was given to 8% of patients, while the respective percentages in our survey were 80.2% and 13.8%. These differences could be attributed to the large variations between hospitals in the administration of antithrombotic drugs, even within the same geographic region – something that has also been observed in pre-

vious studies – as well as to the length of time which has elapsed between the two surveys.^{4,5}

There are insufficient data to explain the low administration rates for indicated medication by treating physicians, either in our own study or in similar studies in the international literature. It is of particular interest that groups such as women and the elderly are far less likely to receive optimum antithrombotic treatment than are younger patients (≤ 60 years). Although this can be explained to some extent by the fear of the long-term complications of antithrombotic agents, aspirin for example, in the elderly, where women are concerned there is no adequate justification. A lower rate of administration of optimum medication, such as aspirin, β -blockers and angiotensin converting enzyme inhibitors, to women with ACS compared to men has also been recorded by other investigators in other countries.¹¹⁻¹⁵ At the same time, most studies of ACS have demonstrated that women show higher mortality and morbidity than men.¹⁶ This cannot be justified solely by the coexistence of known risk factors (e.g. diabetes mellitus, hypertension, heart failure, small diameter vessels, delayed arrival at hospital, etc.). In fact, in current clinical practice women receive the indicated treatment with a greater delay than do male patients. It should be noted that on the basis of older studies it is thought that aggressive therapy (as regards both antithrombotic medication and invasive procedures) should be avoided because of a greater risk of complications.¹⁷⁻¹⁹

In addition, it is important to acknowledge that the treatment recommended by the guidelines is based on data from randomised studies, in which the percentages of women and elderly patients were relatively low (especially in those prior to 1990) in comparison with the extent of the disease in those groups.

Our findings in relation to the patients who underwent coronary angiography show that a small percentage of patients in the Greek population undergo an invasive procedure directly, compared with other European registries that reported rates of 50-70%.^{6,17} However, in those studies, too, it appears that the elderly were treated less aggressively and were less likely to be referred for coronary angiography than were younger patients.

Conclusions

Our findings show that there is a clear gap between the guidelines for ACS and the usual clinical practice in Greek hospitals. In particular, certain groups of patients, such as women and the elderly, are undertreated, at least as far as antithrombotic medication is concerned. In these groups the prescribing of antiplatelet agents that are well-established for the treatment of ACS, such as aspirin, is severely deficient.

The following centres and researchers participated in the study:

1. Polyclinic General Hospital, Athens: P. Harbis, J. Lakoumentas
2. Ierapetra General Hospital: P. Stasinou, M. Foukarakis
3. Komotini General Hospital: A. Panagiotidou, A. Gotsis
4. Kavala General Hospital: A. Tyrologos, D. Simeonidis
5. Patras University Hospital: A. Manolis, E. Simeonidou
6. "G. Gennimatas" General Hospital, Athens: A. Zacharoulis, I. Fotiadis
7. Elpis General Hospital, Athens: P. Bonoris, A. Zikos
8. 7th National Health Foundation Hospital, Athens: P. Sinis, E. Papapetrou
9. Laiko General Hospital, Athens: V. Votteas, A. Hatzizacharias
10. Heraklion University Hospital: P. Vardas, M. Marketou

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