

Cardioneurology: A Widespread Discipline for 21th Century Medical Students and Young Nephrology Residents

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The Experience

About the Author: Rodolfo F. Rivera is a graduate physician currently doing the first year of internship in Medical Statistics at the Pavia University, Italy. He is also the organizer of the Training Program in Cardiovascular Disease of the Society of Nephrology for medical students and residents.

Heart and kidney diseases are closely related and the term “cardio - renal syndrome” is adopted worldwide to underline that linkage. Richard Bright recognized that “hypertrophy of the heart seems in some degree to have kept pace with the advance of the disease in the kidneys”¹ and, after him, George Johnson², William Gull, Henry Sutton³, Franz Volhard, Theodor Fahr⁴, and Henry Goldblatt⁵ confirmed Bright’s hypothesis. In 1956, Gabriele Monasterio et al⁶, the Pisa School of Medicine introduced the term “Renal Cardiopathy”⁷. Further meetings, such as Strasburg⁸, Giessen⁹ and especially Assisi Cardioneurology meeting, have emphasized this relationship, after 25 years of experience largely thanks to Professor Timio.¹⁰ On the other hand, the Advanced Dialysis Quality Initiative, led by Prof. Claudio Ronco from Vicenza (Italy), has contributed greatly to the definition and classification of the “Cardio-Renal Syndromes”.¹¹

The Italian Context of Cardioneurology

The Italian Society of Nephrology (SIN) has recently approved (April 2012) the foundation of the Cardioneurology Study Group (CN-SG) directed by Dr. Luca Di Lullo together with Dr. Antonio De Pascalis (secretary) and other four advisers (Dr. Emiliana Ferramosca, Dr. Antonio Bellasi, Dr. Rodolfo F. Rivera and Prof. Mario Timio), (figure 1). SIN has commissioned them to discuss and achieve specific clinical, scientific (national meetings) and educational goals (residential stages in cardiovascular diagnosis) in cardio-renal medicine, engaging medical students and nephrology residents.

New Formative Runs for Students and Young Doctors

On April 4th and 5th, 2013, the first annual meeting of CN-SG took place near Rome, in the presence of outstanding speakers (both cardiologists and nephrologists) and over 150 delegates. Scientific sessions have focused on coronary artery disease and chronic heart failure, vascular and cardiac calcifications, Fabry disease and amyloidosis, resistant hypertension and other new insights in cardio - renal diseases.

CN-SG is also involved in planning several research protocols; at

Figure 1. Cardioneurology Study Group of the Italian Society of Nephrology. (First line from left to right: Antonio De Pascalis, Emiliana Ferramosca, and Mario Timio; second line from left to right: Rodolfo F. Rivera, Antonio Bellasi and Luca Di Lullo).



the present time, more than 400 patients were enrolled in three clinical studies. This research activity has an increasing participation of students and the consequent production of new graduation thesis. During the last two years, several papers were published in national^{12,13} and international^{14,15,18} journals.

CN-SG has also promoted close collaborations with cardiologists to provide further research opportunities for both medical students and residents in nephrology and cardiology, interested in cardiovascular medicine.

In May 2013, CN-SG was invited to the Italian Cardiovascular Ultrasound Society (SIEC) annual meeting to collect a symposium about cardio - renal interactions and ultrasound diagnostic tools. From this opportunity the group has presented preliminary data about right ventricular dysfunction in chronic kidney disease patients.¹⁶ Therefore, CN-SG was also invited by the European Cardioneurology Association (ECNA) to take part on 1st Southeastern Europe Cardioneurology and Hypertension

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Congress in Nis (Serbia) in a round table on right ventricular failure and chronic kidney disease (CKD).¹⁷

Research Opportunities for Undergraduates and Graduate Levels

Together with study group constitution, the Italian Society of Nephrology council has approved three multicentric research protocols proposed by CN-SG for the next three years. The first one is related to the evaluation of incidence and prevalence of right ventricular dysfunction in Stage III - IV CKD patients. Actually, more than 400 patients were enrolled and preliminary data were available.¹⁸ The second one concerns the predictive value of bioimpedance analysis in patients with chronic heart failure and chronic kidney disease; the study is currently in the enrolling stage. The last one is focused on evaluating cardiovascular assessment (especially incidence and prevalence of pericardial effusion) in patients with familial polycystic kidney disease. This study has a case-control design with 220 patients and more than 300 controls currently enrolled.

Figure 2. Dr. P. Poleggi during the training on Basic Life Support- Defibrillation (BLS-D).

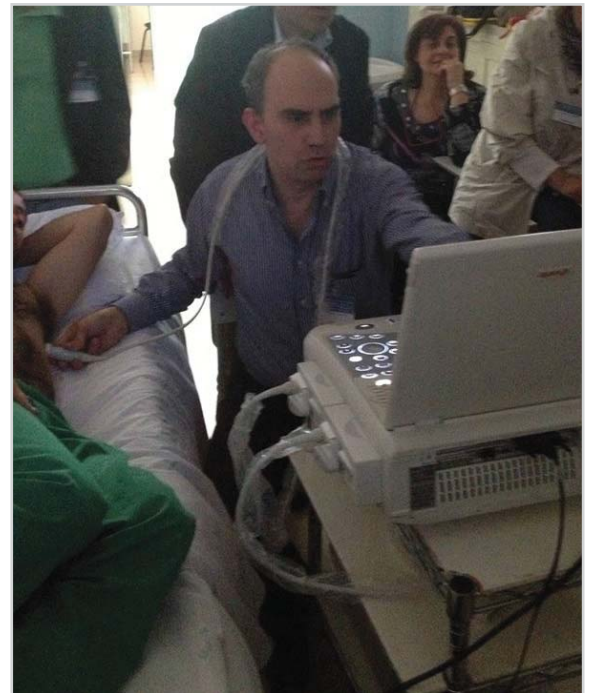


The three ongoing research protocols are giving a great opportunity to several students to be involved in research at an undergraduate level.

New Clinical Stages and Fellowship

On the educational front, CN-SG provided "residential stages" for all medical students and nephrology residents required to be confident with diagnostic approach to cardiovascular disease. The educational program includes practical sessions on electrocardiography and echocardiography diagnostic devices

Figure 3. Dr. L. Di Lullo during an echocardiographic practical exercise.



together with complete training on Basic Life Support- Defibrillation (BLS-D) (**figure 2**). All tutors are certified by respected scientific societies such as SIEC (**figure 3**). New dates are planned in 2013 and 2014.

CN-SG has recently also involved in educational training of Italian post-graduate schools of Nephrology by setting up seminars of Cardioneurology for medical students and residents. Students coming from the Internal Medicine Division of Iturraspe Hospital in Santa Fe, Argentina (Litoral National University) performed three months of clinical stages at the Nephrology division in San Gerardo Hospital, Monza, Italy (Milano-Bicocca University), a helpful experience to share different ways of managing daily nephrology practice.

All CN-SG activities, courses, downloadable material and other news are available on the internet (<http://www.sin-cardioneurologia.it/>).

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