EUROPEAN SOCIETY OF NEURORADIOLOGY SEMINAR HELD IN VENICE, JUNE 1997 : TRAINING IN NEURORADIOLOGY

Pierre LASJAUNIAS
President of the ESNR

INTRODUCTION

OBJECTIVES

The two-day seminar brought together the chairmen of the different committees of the ESNR. Our aim was to define guidelines on the teaching of Neuroradiology which was felt to be the responsibility of the ESNR, in line with its goals and priorities. The questions concerning our speciality, raised in the first seminar of this group in Bologna (December 1996), and the conclusions of this seminar were partly presented in Oxford 1997. That presentation will be completed in Lisbon in September 1998.

The variety within this group of participants*, both geographically and in its members' practice of neuroradiology, guaranteed a wide range of views. The challenge consisted in considering systems where Neuroradiology remains a technique-oriented speciality, without penalizing others where Neuroradiology is regarded as a clinically-oriented speciality. Our discussions were guided by three concerns : the patient's interest-taking into account the present state of the art -, the flexibility of the training of neuroradiologists over time, and the ESNR tradition and expertise, building on the work already accomplished during the previous presidencies.

BETWEEN OPENMINDEDNESS AND VULNERABILITY

The present trend is to break the various aspects of Neuroradiology into sectors, by defining each section as either neurological, neurosurgical, cardiologic, paediatric, or "purely" radiological. Each sister speciality claims access to neuroradiological practice for itself. The following article published in "Neurology", establishes clearly such intention and the rationale used to support it. J. Brillman, R. Kasdan, L.Wechsler, The neurologist as neuroimager. Neurology 1997; 48:303-311.

Some illustrative parts of this article have been selected :

"Unfortunately, radiologists with no neuroradiology fellowship training often fail to help the clinician. ...In many instances, neurolo -gists use the imaging findings to make clinical decisions without having to consult a neuroradiologist. If there is no need of it, such a consultation delays the work - up and wastes resources.

...Many neurologists are qualified to interprete neuroimages and ultrasounds on their own patients. Indeed,...,neurologists may be best suited and trained for this purpose. ...The clinician is giving meaning to the image. The

* **Invited participants :**
D. Baleriaux, J.F. Bonneville, J.P. Braun, J.V. Byrne, J.C. Casselman, O. Flodmark, A. Goulao, H. Hacker, I. Isherwood, P. Lasjaunias, M. Leonardi, C. Manelfe, I. Moseley, P. Nakstad, L. Picard, C. Raybaud, J. Reul, J. Ruscalleda, U. Salvolini, K. Sartor, E. Schindler, G. Scotti, O. Schubiger, A. Thron, P. Tortori Donati, A. Valavanis, J. Valk, G. Wilms.

neurologist as neuroimager is also often patient friendly. In our patient setting, the convenience offered to patients by having a neurodiagnostic procedure at the time of their evaluation is expedient. ...For hospitalized patients, many practising neurologists are well aware of the need to interprete an image and apply its findings to an emergent setting before the radiologist has reviewed the film. Dictated reports are often placed on the patient's records several days later when therapeutic interventions have already been taken and often after the patient has been discharged. ...If radiologists are the exclusive providers it is likely there will be a demand for higher fees in the absence of a competitve market place. ...Indeed, clinical neurologists may be in the best position to know when a scan is necessary, which type of imaging test to order, and to determine whether contrast enhancement is required. ...Imaging is an integral part of the practice of neurology. ...If properly trained and certified, orthopedists, cardiologists, internists, obstetricians and other specialists should be able to interprete ancillary studies specific to their area of expertise and for the well - being of their patients. Insurers who develop poorly informed exclusionary policies of reimbursing only radiologists for the interpretation of images, must be educated and if necessary, aggressively challenged in the courts."

In such an unfriendly debate the policy and recommendations of the ESNR are exemplary : the historical ties that link the different components of neuroradiology to clinicians, the academic commitment of its members close to other specialities, the quality of its scientific contributions as well as its formal commitment in the initial teaching and continuing education of neuroradiology for 15 years.

The cited article and others in other fields, illustrate the reality of this offensive appetite for Neuroradiology and the attempt to fragment it as a specialty, all of which highlights the value of neuroradiological advances to the practice of medicine. From a positive standpoint, such an aggressive discussion is intended to offer patients the best possible knowledge developed by neuroradiologists over the years. The final purpose of such claims, however, is not to develop what is clearly adequate but only to apply it to the largest possible population. On that former intention we certainly agree, but our ambition takes us further...

RECOMMENDATIONS OF THE XV DIRECTORATE GENERAL OF THE COMMISSION OF THE EUROPEAN COMMUNITIES

These recommendations have been made within the mainframe of the Internal Market and Financial Services, Intellectual and industrial property, Freedom of establishment and freedom to provide services, notably in the regulated professions. The Advisory Committee on Medical Training suggested the EC Member States modify the list of medical specialities, adding some new disciplines. In this proposal the field of radiological activities (generally speaking) could be modified in a larger corpus :
Diagnostic Radiology
Paediatric Radiology
Neuroradiology
Radiotherapy and Oncology
Nuclear Medicine

This proposal acknowledges the specificity of the practice in Neuroradiology and its training, recognises the proposal made by our pioneers and the quality of European Neruoradiology, and takes into due account the position of our Portuguese colleagues who have had a specific training and title for Neuroradiology for fifteen years.

The recommendations will be examined

in the near future by the Governments of the EC Member States and when approved will be voted by the Strasbourg Assembly. Then the EC Member States will be obliged to recognise a specific title awarded by another EC Country. This completely new situation will certainly clarify the need for the specific training we have been proposing for years and foster the development of specific academic courses in Neuroradiology. These recommendations are valid only for the EC Member States, but European Neuroradiology in general, and ESNR in particular, are held in consideration and heard outside Europe and naturally in the non - EC European countries. We can thus foresee major developments for Neuroradiology in Europe.

GENERAL PRINCIPLES OF TRAINING IN NEURORADIOLOGY

Up until such time as a curriculum and certification in Neuroradiology are established, the discussions around practice will be the prevailing component of teaching and specialisation. "There are not enough specialists to interpret neuroradiological examinations, even though all the neuroradiological sectional explorations are not necessarily carried out by neuroradiologists". We therefore need more neuroradiologists as well as a longer or even a more specific training in neuroradiology.

Along with mastering the discipline, consideration should be given to the problem of costs in the development of Neuroradiology. Neuroradiological practice should avoid giving priority to an acquisition of images requested solely by prescribers. The list of the possible diagnostic errors increases when episodic contact with clinicians is a polyvalent radiological practice of neuroradiology. It does not correspond to the quality of care that patients should expect today. The discussions have highlighted in particular, sufficient clinical rotations and training, which best prepare specialists for neuroradiological practice. The group considered that individual imaging competence, technical capabilities and budgets can be taken into account as long as they do not jeopardize the quality and the safety of the diagnostics and care for patients. A line has therefore to be drawn somewhere, and it is suggested it should refer to the medico - legal responsibility of the specialist who agrees to perform and interpret neuroradiological procedures. His/her ability can be questioned simply with the information he gives to the patient. This remark points to the prevalence of decision-making over "blind skill"

Focussing the training organisation in Neuroradiology on X-rays, ultrasonographic imaging, or MRI is to ignore the contents of Neuroradiology, or confuse discipline with practice. One can perceive the various levels between a science (or discipline), a technology, and tools : thermodynamics (a science) permitted the birth of the internal combustion engine (a technology) and finally the construction of cars (tools). Neuroradiology may not be specifically a science, but it is certainly a discipline; it cannot be deemed simply a technology or a tool. An educational programme must teach science, illustrate it with technology, and implement it with the example of tools or applications. For the time being the training programs proposed maintain the confusion between the three levels. They present ephemeral tools pretending they are technologies ignoring where the science or discipline that made them possible stands. Such disorder in scale and priorities can be justified in strict practical training but it is contrary to the principle of constancy and universality that govern education projects. One can understand why ESNR's commitment is to build Neuroradiology teaching as a discipline

and to ensure its excellence through the next generations.

PROPOSALS

- Neuroradiology is performed at its best within an environment of neurological disciplines (neurology, ENT surgery, ophthalmology, maxillofacial surgery, neurosurgery...). The training center should nevertheless have a critical mass of examinations, sufficient both in quality and quantity, as well as tutorship by senior neuroradiologists, to justify its accreditation. The search for a minimum number of explorations per trainee should be made depending on requirements. The accreditation of centres could be under the responsibility of a committee formed by the ESNR in agreement with the competent national and European professional administration body.

NEURORADIOLOGICAL TRAINING OF GENERAL RADIOLOGISTS :

The following conclusions were adopted for the neuroradiological training of general radiologists :

- Neuroradiological training must take place early in the training of general radiology, before the third year, because of the role played in duty shifts by juniors in training.- It must focus on CT and MRI of the skull and spine emphasizing "cross sectional neuroimaging". Myelography and angiography should not be practically taught. The study of radio-isotopes and neurosonography depends very much on the level of each country.

- Six months or seventeen weeks of neuroradiology training are recommended : this would be the minimum time to reach a basic level of knowledge. Harmonization with the ten weeks of head and neck teaching should be well coordinated.

- The training must be continuous during these six months without interruptions, preferably immediately before or after the head and neck part of the training.

- The teaching must be carried out by active neuroradiologists, trained with the recommendations proposed below.- The log-book, its content and its follow-up certifies the training received and guarantee the competence of the individual in reading sectional images.

- For the posts offered to graduated general radiologists in a general radiology department that includes some neuroradiological activities, six months of supplementary training should be required. A network of relations and the use of telediagnostics should be encouraged, in order to avoid the isolation of radiologists in this kind of situation.

- Continuing education should be specifically adapted for all those general radiologists who carry out neuroradiological examinations outside a neuroradiological facility. Someone working without daily contacts with the clinic and fundamental specialists in the neurological and head and neck disciplines will soon alter his competence in neuroradiology.

NEURORADIOLOGICAL SPECIALIZATION IN GENERAL RADIOLOGY

General radiologists who have spent five years in training (and have not shown interest in a particular organ) will have to spend at least two years in training to acquire a neuroradiological specialization. This training is expected in addition to the six months of neuroradiology teaching intervening during the general training. They will receive both academic and practical teaching. The group believes that this training

produces general radiologists with a specific interest in neuroradiology, different from neuroradiologists.

- This training must take place within a neuroscientific center (neurological, neurosurgical, etc...). This training must be carried out full time and continuously.

- The theoretical training must be at least one hour and ideally two hours a week, for forty-eight weeks a year ; the trainee will be exposed to up to a total of about two hundred hours of theoretical training.

- A tutor must be appointed for each future specialist. The ratio between the number of tutors and that of the students must be determined : one to two, one to three. Tutors like teachers, must be actively practising neuroradiologists.

- MRI spectroscopy, functional MRI as well as basic knowledge in neurology, neurosurgery... are necessary. A basic training in paediatrics, head and neck and interventional neuroradiology must be considered.

- A log-book will certify the balance among the different kinds of examinations and procedures (invasive and non invasive) performed during training. No precise recommendation could or should be made concerning the required quantity for each kind of neuroradiological examinations. Such aspect is secured by the procedure for accreditation of the training centres that takes into account the variety and amount of each kind of examinations performed each year.

TRAINING OF NEURORADIOLOGISTS (THE DIRECT LIMB)

The training will last at least 5 years.

- For two years, non neuroradiological rotations should take place, after admission in the speciality training. Each of these rotation years will be evaluated. Among the usual rotations discussed, training in neurology is considered the most useful, while general radiology is not regarded as compulsory. The importance and duration of training rotations in neurosurgery are evaluated differently by members of the group, depending on the future option of the trainee. A compulsory core knowledge of general radiology included in that training will have to be achieved formally at least by a theoretical teaching, if necessary certified with a qualification. Each of these training sections may constitute credits to be used to build bridges (both ways) with the training in general radiology, neurology, neurosurgery... etc.

- There years full time in neuroradiology are necessary (the third year could be the first year of sub-specialised neuroradiology) at least two of them in continuation. Practical and theoretical training will be organised as well as research. A board examination will certify this 5 year curriculum. Adjustments to this frame have been proposed for those who would like to enter sub-specialised neuroradiology.

Paediatric, head and neck and interventional neuroradiology require specific training over 1 or 2 years. For the former, the 5 first years of the curriculum could be as follows :

- in the non neuroradiological rotations, six months in paediatric neurosurgery, six months in paediatrics (or in paediatric neurology), six months in paediatric radiology, six months in adult neuroscience or a research programme

- three years in neuroradiology, including, for example, six months in interventional neuroradiology and six months in head and neck neuroradiology. The sixth year is

considered specifically devoted to paediatric neuroradiology. Paediatric neuroradiology can be certified only at the sixth year of training.

Interventional neuroradiology considers compulsory the practice of diagnostic neuroradiology for two years following the non - neuroradiological rotations ; then two years of interventional neuroradiology are required, the first of which could be the fifth year of the training. For head and neck neuroradiology, it is recommended to enhance rotations in ENT surgery or in cancerology (one year), in interventional neuroradiology (six months) during the clinical rotations ; a year in head and neck neuroradiology should be included in the neuroradiological years. A sixth year of head and neck neuroradiology is equally suggested.

Such recommendations are examples, the detailed programmes and rotations should be flexible and include international programmes and exchanges in specific sectors of neuroradiology, where regional appropriate training facilities are not available.

GENERAL CONCLUSIONS

Some of the most senior professionals and teachers of European neuroradiology have proposed "their" optimal solutions for training in Neuroradiology. The recommendations thus made are independent of political and strategic bias and have in mind both the professional future of the trainees and patients' best interests. The group is aware that these decisions may lead to frank discussions with other related specialities.

1. The present neuroradiological training in general radiology is not sufficient, considering the number of neuroradiological examinations for radiologists working on duty shifts very early in their training.

2. The neuroradiology specialization of radiologists does not train a neuroradiologist but a general radiologist with a particular interest in neuroradiology. Albeit this training is the answer to a current need and to a widespread practice within non - specialized facilities, it would not train optimal teachers and professionals of neuroradiology.

3. All training in neuroradiology must be continuous during the proposed rotations in each curiculum. This training must be organized in neuroradiological departments, offering daily contact with the other neurological specialities.

4. It is mandatory to create a specific educational curriculum for individuals who decide early on to become neuroradiologists. It will prepare trainees for full time neuroradiological practice in neuroradiological facilities (integrated or autonomous) within institutions with neurology and neurosurgery departments. General radiology knowledge must be certified (while the training rotations in general radiology remains optional).

5. This specific training in neuroradiology extends over five of six years. It prepares trainees on all aspects of neuroradiology (adult diagnostic neuroradiology, paediatric neuroradiology, interventional neuroradiology, head and neck neuroradiology, ..).

specialised Radiology
Neuroradiology
1st year
2nd year
3th year
4th year
5th year
6th year
7th year
Ped.N
INR
neurology
neurosurgery
ENT
maxillo-facial
pediatric neurology
pediatrics
pediatric neurosurgery
....
Theoretical courses
Clinical Neuroradiology
Head & Neck, Pediatric,
Interventional, Geriatric, ...
(200 hr. OVER 2 YEARS)
General or pediatric radiology
Optional (clinical, ...)
Clinical sp. > 1,5 y
Clinical Neuroradiology
Head & Neck > 2 y
Sub - specialised Neuroradiology