Highlights of the European Association of Nuclear Medicine Congress, Paris 2000

Bernard D. Bok
Hôpital Beaujon (C.H.U. Xavier Bichat – Université Paris 7), 100 Boulevard du Général Leclerc, 92110 Clichy, Paris, France
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Abstract. The recent European Association of Nuclear Medicine Congress, “Paris 2000”, was an exceptional success, as illustrated by the record attendance. This review discusses some of the key new findings presented at the Congress in the fields of neurology, cancer therapy, cancer diagnosis, cardiology and miscellaneous other areas. The progress being made indicates that nuclear medicine has a bright future in the new millennium.

Keywords: Neurology – Cancer diagnosis – Cancer therapy – Cardiology

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Introduction

The title which was given to the recent European Association of Nuclear Medicine Congress, “Paris 2000”, was short and strong. This simple appellation was sufficient to identify its exceptional features:

• Paris is the most popular and most visited city in the world. The show during the opening session splendidly illustrated its beauty.
• The year 2000 was celebrated world-wide as a major milestone in our collective imagination. It was simultaneously the end of a century (the century of radioactivity) and of a millennium, and the beginning of a new era.

This congress was also exceptional in terms of its success, exemplified by the record attendance. This was due in part to the two aforementioned factors, but also to the efforts of the whole organising committee and the Congress President, Serge Askienazy. In total, 4,720 participants registered (excluding accompanying persons): 3,006 scientific participants and 1,714 industrial registrants.

A major feature of this Congress was the very high quality and importance of the plenary lectures delivered by outstanding leaders in their field. They cannot be summarised here, but it is worthwhile noting that all of them are available on CD-Rom (www.muscript.com).

General overview

A huge number of papers were submitted this year (1,651). Of these, 456 were accepted for oral presentation (27.5%) and 886 for presentation during the poster sessions.

The distribution of papers according to topic is shown in Fig. 1a. In fact, this figure is reductive and over-simplistic in that most papers dealt with several topics simultaneously, and one of them was chosen by the authors for the purpose of presentation. In addition, there were very often links between methodological and clinical topics. Nevertheless, for reasons of clarity it remains necessary to assign each paper to a given category, even if this is to a large extent artificial.

The distribution of papers according to country is shown in Fig. 1b. This, too, is to some extent misleading. Many papers were the result of cooperative work by institutions from different European countries. This phenomenon is very interesting and truly represents the growth of a “European Spirit”. In addition, several papers were based on cooperative work overseas by collaborators from American and/or Asian countries.

The selection of papers to be cited in this review was extremely difficult owing to the high number of very good papers on all topics. The choice was therefore often subjective.

This presentation will be arbitrarily divided as follows:

• Neurology, including (a) neuroreceptors and transporters and (b) brain metabolism and perfusion
Cancer therapy, the major topic this year

- Cancer therapy
- Cancer diagnosis
- Cardiology
- Miscellaneous, including infection and inflammation, paediatrics, instrumentation and image processing, radiopharmacology and labelled compounds, and metabolic studies

Neurology

Neuroreceptors and transporters

The presented brain studies ranged from fundamental studies to clinical evaluations. The aspects addressed included the development of radiopharmaceuticals, instrumentation and experimental design, and clinical studies.

The example of dopamine transporters and receptors is striking. The paper by Scherfler from Innsbruck [1] illustrated, in an animal model, the simultaneous implementation of two improvements, namely (a) co-registration with MRI, allowing precise delineation, and (b) improvement in resolution using pinhole SPET. Employing a rat model of unilateral Parkinson’s disease and $^{123}$I-ß-CIT, the authors showed that striatal binding of this dopamine transporter was markedly reduced on the side of the lesion (Fig. 2).

Again with regard to Parkinson’s disease, but this time on the clinical side, the diagnostic value of $^{123}$I-IBZM was emphasised by Prunier et al. from the group in Tours [2]. They studied degenerative extrapyramidal disorders at an early stage in a series of more of 115 patients. SPET was able to accurately distinguish Parkinson’s disease from other diseases such as supranuclear palsy.

Another clinical study on parkinsonism, this time using the $^{99m}$Tc-labelled dopamine transporter TRODAT, was presented by Tatsch [3]. This radiopharmaceutical was developed in Philadelphia by H.F. Kung, but the clinical study was performed in Munich.

It was reported by Dresel that attention deficit hyperactivity disorder may be successfully treated with methylphenidate, a potent blocker of the dopamine transporter. Brain SPET using TRODAT before treatment showed elevated specific uptake of TRODAT as compared with normal patients. Uptake decreased under treatment to values lower than in normal controls; moreover, the reduction correlated well with the clinical improvement. This illustrates nicely the role that nuclear medicine can play in elucidating and monitoring a therapeutic effect [4].

Another example of this was provided by Catafau of the Barcelona Group (based in the department of I. Carrio). These authors used $^{123}$I-IBZM to investigate the dopaminergic D₂ receptor (D2R) occupancy rate in patients with psychoses, including schizophreniform disorder, with the aim of explaining the delay in response to an antipsychotic drug (risperidone) [5]. In fact, they found that the blockade of the D2R receptors occurs early, and thus other hypotheses have to be formulated to explain the delay in clinical response.