LECTURE
ΔΙΑΛΕΞΗ

Pre- and post-graduate teaching of hemostasis and thrombosis

ARCHIVES OF HELLENIC MEDICINE
2000, 17(Supplement A):78–81
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ
2000, 17(Συμπληρωματικό τεύχος Α):78–81

U. Seligsohn

Institute of Thrombosis and Hemostasis, Department of Hematology, The Chaim Sheba Medical Center, and Sackler Faculty of Medicine, Tel-Aviv University, Israel

Προ- και μεταπτυχιακή εκπαίδευση στην αιμόσταση και θρόμβωση

Περίληψη στο τέλος του άρθρου

Key words

Education in hemostasis
Postgraduate education
Pregraduate education

1. INTRODUCTION

What I would like to do tonight is to share with you some ideas that I have accumulated over the years and present to you two main topics: one is education programs on hemostasis and thrombosis for medical students and secondly for physicians in the postgraduate arena.

First, let me define a couple of concepts. We need to remind ourselves what is education? Education is learning something of value. This of course is based on one's ideology and values. Learning is the introduction of changes in knowledge, skills and attitudes. Teaching is a mode of intervention that facilitates learning.

An extremely important point is the evaluation of the education programs. It is absolutely necessary that following each educational activity an analysis of the outcome be carried out. The main questions to be asked are: (a) have the goals of education been achieved? which means that we have to define the specific goals for each education mode; (b) has the process of education been logical? sometimes we think that everything is very logical at the outset, but then, in retrospect, we may have a different opinion; (c) did the program fit the goals? (d) was the program applicable? (e) was the program well received by the students or the doctors that were tought? (f) were the teachers satisfied; There are different techniques to get the answers to these questions, e.g., by anonymous examinations, open discussion with the students etc.

Before providing you with an outline of the methods of teaching we use at the Sackler School of Medicine at the Tel-Aviv University, let me remind you that as hematologists or hemostasiologists we are being called for consultations by almost every department in the Medical Center, since bleeding and thrombosis are prominent problems encountered by physicians in all disciplines of Medicine. This means that we must get involved in the teaching of these specific problems in each of these areas. The second point is that hemostasis is an extremely difficult subject to learn, which means that we have to devote much attention in making our teaching effective during the six years of our program. This demands careful planning, and introduction of constant changes in our curriculum.

Regarding the introduction of changes or innovations in education we frequently fight with inertia. Sometimes, one gets the feeling, during meetings of the curriculum committee, that he is in a safari, where the professors (like animals) fight for their territories. Professors usually feel that their particular discipline is the most important one, and when the curriculum committee allocates less hours for teaching their disciplines they are offended and conclude that the faculty thinks they are less important.

One other impediment which I found in the academia is tradition. Tradition is useful when it promotes the "esprit de corps". However, tradition may result in anachronism which interferes with innovation, and leads to decadence.

One additional problem in promoting progress in education is the lack of sufficient incentives for the teachers at the University. Good teaching skills are taken for granted. Not too many Universities devote time to the improvement of teaching skills by its professors. Admittedly, a good teacher needs to possess the right genes and desire to do it. However, in my view, the University must teach its teachers how to develop their skills, and offer appropriate incentives for the good teachers. Unfortunately, at the present time most appointment committees at Universities do not pay sufficient attention to the teaching achievements of their faculty when they are considered for promotion. Only research accomplishments (publications) usually count-which is to be regretted. Luckily, in the United States and several European Universities this attitude has been improved.

Another handicap in designing pluralistic education are the students. It is quite common to note that students are reluctant to accept change or innovation. Since the students are under great pressure they usually prefer to use the notes from previous years' lectures, rather than study something new by a different approach.

Having said all this, let me now review for you our current approach to teaching hemostasis at the Sackler School of Medicine in Tel-Aviv University. Our preclinical teaching takes place on campus and clinical teaching is carried out at the 7 Medical Centers affiliated to the Medical School. This means that we have to coordinate teaching very well.

Table 1 is an outline of the teaching program of hemostasis during the six years of Medical School. In the first year we are not involved. During the second year we are involved in a course that will start this year and is called "Molecular Basis of Diseases". Regarding the third year, until now we were involved in a course that was called "Introduction to Medicine". This course has now been incorporated in a more general course named "The study of Systems". During the fourth year, i.e., the year when the students start their clerckships in Internal Medicine of the hospitals, seminars on hemostasis and thrombosis are given as well as visits to the Coagulation Clinic and Coagulation Laboratory. During the fifth year, the students get seminars during their clerkships in Surgery, Pediatric and Gynecology. In the sixth year, the students can choose to spend one month electives in several Departments among which is Hematology, which includes of course on hemostasis and thrombosis.

Table 1. Courses in which teaching of hemostasis is incorporated during medical school.

First year	0
Second year	The Molecular Bases of Diseases
Third year	Introduction to Medicine
Fourth year	Seminars and visits to coagulation clinics and laboratory during clerckship in Internal Medicine
Fifth year	Seminars during clerckships in Surgery, pediatrics and Gynecology
Sixth year	One month elective in Hematology

Let me give you some examples. The course "Molecular Basis of Diseases", consists of 77 hours of teaching. We managed to introduce nine hours: four hours are devoted to atherosclerosis, one hour is devoted to homocysteine, and four hours to blood coagulation disorders. Two of the 4 hours on coagulation comprise the molecular basis of bleeding disorders, and two the molecular basis of susceptibilities to thrombosis. Our goals in these lectures are to make the students understand the pathways leading to blood coagulation and its inhibition, become acquainted with the essential components of blood coagulation and the inhibitory mechanisms, and hear for the first time about the clinical consequences of molecular abnormalities. We illustrate these topics by describing the molecular bases of Glanzman Thrombasthenia, hemophilia A, the deficiencies of antithrombin and proteins C and S, and the prothrombotic polymorphisms (factor V-Leiden and prothrombin G20210A).

The third year course on "The Systems" is an integration of anatomy, pathology, physiology, pharmacology and the relevant clinical aspects. Altogether this course lasts 37 weeks among which 3 are in hematology with a total of 60 hours (tabl. 2). Of these 60 hours, 18 hours are devoted to hemostasis and thrombosis. This is the first time the students get a comprehensive introduction into the field of hemostasis. The topics we cover are outlined in table 3. We do it by lectures, laboratory demonstrations, and discussion of cases. This integrated course will not be easy for the students since they will have to learn a lot at the same time, but we shall see how it works.

Hemostasis teaching in the fourth and fifth years revolves around building up approaches. Teaching consists of seminars in which the tutors try not to speak too much, but raise questions and then summarize. Exam-

Table 2. Teaching of the systems during the third year*.

Systems	Weeks	
Nervous	6	
Endocrine	3	
Reproductive	3	
Cardiovascular†	6	
Blood	3	(hemostasis 1)
Gastrointestinal	3	
Respiratory	4	
Renal	4	
Musculoskeletal	37	

* Integration of anatomy, pathology, physiology, pharmacology and relevant clinical subjects

† Includes pathogenesis of thrombosis and thrombolytic therapy

Table 3. Topics in hemostasis and thrombosis during the course on the systems during the third year.

Platelets and endothelial cells
Coagulation and fibrinolysis mechanisms
Main coagulation tests
Hemophilias and other bleeding disorders
Acquired hemostatic abnormalities
Venous and arterial thrombosis
Antithrombotic agents and their use

ples of "approaches" are the approach to the patient with a bleeding tendency and the approach to the patient who has a potential tendency to thrombosis. These are given during clerckship in Internal Medicine. The approach to preparing patients for surgery and management of bleeding complications during operations is given during the clerckship in Surgery, the approach to bleeding and thrombosis during and after pregnancy in the clerckship in Obstetrics and Gynecology, and the approach to bleeding and thrombosis in newborns and during childhood in the clerckship in Pediatrics.

The sixth year, as I said, is devoted to electives. Students who choose Hematology join the staff of the various Hematology Departments, and engage in their regular activities. If we have a large group of students we prepare a special program of seminars for the students on most important topics of hemostasis and thrombosis.

Let me now switch gears and move to postgraduate teaching. One mode of teaching was used by us several years ago in an one week course that Professor Gerard Tobelem from Paris and myself organized near Paris within the framework of the European School of Hematology. My lesson from this course was that the success of such postgraduate courses depends on several factors (tabl. 4). We must know who are the students a-

Table 4. Factors affecting the success of post-graduate courses.

Appropriate selection of objectives
Careful consideration of who are the target students
Choice of the relevant topics for education
Recruitment of the best faculty
Marketing
Evaluation, reassessment and improvement

head of time and design the program accordingly. An evaluation as to what are the main needs of the particular students is essential. At times this may not be easy to find out and one has then to decide what might be important. Recruitment of the best Faculty is also salient. We have to remember however that not infrequently excellent scientists are terrible teachers. I would always compromise for less prominent scientist if they are good teachers. A very important issue, is marketing, which should consist of clear definitions of the goals, the topics and the Faculty. Evaluation of each course is an essential ingredient not to be forgotten. If the course is repeated, reassessment is necessary since goals may change, as well as topics, not to speak about the best possible faculty.

One point that we need to take into account is that the young MDs and/or PhDs whom we teach in such courses may be the future leaders of our discipline. The example we set by conveying to them our approaches may have a critical impact on them. We should also acknowledge the fact that both MDs and PhDs are extremely important for the development of good hemostasis and thrombosis services, and that both should learn in such a course about each others' problems in evaluating clinical and laboratory data, respectively. Discussion of cases and promotion of the interaction between MDs and PhDs during the courses are therefore desirable.

Participants of postgraduate courses can come from a variety of disciplines since there is a growing interest in hemostasis and thrombosis worldwide. For example, cardiologists have created a new subspecialty-"Thrombocardiology" and in Pediatrics we have a similarly evolving subspecialty. Neurologists, intensivists, gynecologists, and vascular surgeons are additional examples. Participants who are PhDs can come from coagulation services, research laboratories, or from the pharmaceutical companies. They can be biochemists, biologists, molecular biologists, or physiologists. This potential heterogeneity is important to reckon with in designing the program, its lectures and discussions.

Other issues to be considered in the organization of postgraduate courses are attaining adequate funds, finding a good location (a remote comfortable place is prefer-

able), and make good use of the limited time. Preparation of a booklet is helpful. It should contain all lectures or at least abstracts of the lectures, prints of the slides, key references of latest reviews and articles, case studies, and points for discussion.

In the one week course we organized near Paris we had a two hour session early in the morning, a late morning session that was a guided exercise, an early afternoon lecture, a late afternoon guided exercise and an evening session of free discussions with a tutor on all subjects discussed during the day. During the evening sessions we just had to initiate the discussion and then the students did not want to stop. These last sessions are reminiscent of "meet the expert" sessions in Congresses but are held at a much more relaxed atmosphere. We evaluated the course by an anonymous questionnaire at the end of the fourth day, and on the fifth day we debriefed it together with the students. The organizers of the course later summarized the lessions that have been learned and made recommendations for the future.

Finally, I want to briefly mention a three week international postgraduate course which we plan for 2001. About ten years ago, we initiated in Israel a program for training physicians from the developing countries. These physicians come for 3 months (twice a year) and join the staff of departments they choose to be associated with. They also receive a selected series of lectures in general subjects of Medicine, and visit various institutions all over the country. This program has been very successful, and so far 750 physicians have participated from more than 50 countries. We are now planning a course on thrombosis and hemostasis for MDs and PhDs from developing countries. The principles resemble the one week course we organized in France. The extended time will enable us to use additional educational modalities such as participation in the daily work of the National hemophilia Center, Coagulation Clinics. We shall also prepare laboratory demonstrations, and a visit to Israel's blood transfusion center.

In summary, for both medical students physicians, and PhDs education on thrombosis and hemostasis is essential and feasible if one uses the right approaches.

Corresponding author:

U. Seligsohn, The Chaim Sheba Medical Center Department of Hematology, Tel-Hashomer, 52621 Israel

ΠΕΡΙΛΗΨΗ

Προ- και μεταπτυχιακή εκπαίδευση στην αιμόσταση και θρόμβωση

U. SELIGSOHN

Institute of Thrombosis and Hemostasis, Department of Hematology, The Chaim Sheba Medical Center, and Sackler Faculty of Medicine, Tel-Aviv University, Israel

Αρχεία Ελληνικής Ιατρικής 2000, 17(Συμπληρωματικό τεύχος Α):78–81

Λέξεις ευρετηρίου: Εκπαίδευση στην αιμόσταση, Μεταπτυχιακή εκπαίδευση, Προπτυχιακή εκπαίδευση