Points of view

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Is there room for "transplantation medicine" as a medical discipline in its own right?*

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In my opinion, it is both the task and obligation of our new ESOT Society to discuss the various aspects and problems concerning the future structure and organization of clinical organ transplantation. This is all the more the case given the fact that these problems are currently being discussed worldwide by the "classic societies" (surgery, internal medicine, etc.) and have turned out to be not only a simple matter of controversy but in fact a delicate matter of debate between the classic societies and the transplantation societies. The future solution to this problem is even more difficult because both medical and political aspects may play an important role in this field.

This controversial issue is already reflected in the different ways the term "transplantation medicine" is used. While used routinely by colleagues working in the field of organ transplantation, it is still a "suspicious" term that is not always taken seriously by many of our colleagues working only in the classic disciplines of surgery, internal medicine, and the like.

Therefore, I would like to discuss three points more objectively related to transplantation medicine: (1) justification of its discussion; (2) an attempt at its definition; (3) justification of its existence.

Justification of the discussion of transplantation medicine

In my view, the discussion of a new medical discipline - transplantation medicine - is absolutely mandatory at present for the following reasons: the recent expansion and success of organ transplantation necessarily brings the problems of education of transplant physicians as well as the future establishment of institutions where all kinds of organ transplantations will be performed into focus. The underlying impetus for the expected development of rapid transplant center proliferation is multifactorial and - what is important for drawing any final conclusion - it is uncontrollable and, therefore, dangerous. These factors include several which have, in part, already been stressed by Monaco [1], namely:

1. The obvious increasing success of all organ transplants

2. The misconception that the problems of immunosuppression are over

3. The obviously wrong and misleading assumption that organ transplantation is simply and strictly a technical problem that any good surgeon can handle

4. The decrease in all surgery with regard to treatment of formerly classic "surgical" diseases

5. The fact that transplantation surgery (liver transplantation, heart-lung transplantation) is assumed to be a sort of "prestige surgery" which must be done in order to belong to a first-class hospital (and to be a first-class surgeon, too)

6. The fact that successful scientific and research surgery in surgical fields other than transplant surgery appears to be more difficult to achieve within the next 5-10 years

These aspects - and I did not mention all of them - seem to me to be reason enough to discuss at least the issue of transplantation medicine.

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An attempt at a definition of transplantation medicine

Just what is transplantation medicine? It is most critical that an answer be formulated to this question.

I would like to define transplantation medicine as the performance of global, transdisciplinary - not interdisciplinary - medicine in the field of clinical organ transplantation, provided by the close cooperation or, still better, integration of such disciplines as transplant surgery, transplant nephrology, transplant immunology, transplant urology, transplant cardiology, transplant cardiac surgery, and the like.

If we agree with such a definition, we then have to define transplant surgery, transplant nephrology, transplant immunology, etc. This can best be achieved by analyzing the education of our colleagues in these different disciplines. Thus, the question we must ask becomes more precise: what is, for example, the definition of a transplant surgeon with regard to his training?

A transplant surgeon is certainly not just someone who sews in an organ and leaves all subsequent patient management, complications, problems, etc. to colleagues in other disciplines. On the contrary, a transplant surgeon is, or should be, a surgeon who has combined his surgical skill with basic science and who has broad experience with immunosuppression, organ preservation, and the like. As already stated by Monaco [1], who gave a remarkable interpretation of a transplant surgeon last year at the American Transplant Surgeons Conference:

> They (the transplant surgeons) were the eggheads of surgery talking about genetics, immunohistology, inbred strains, tolerance, enhancement, haplotypes, public antigens, private antigens - and, more recently, lymphocyte subsets, killer cells, suppressor cells, helper cells, lymphokines, Il-1, Il-2, interferon, and so on.
>
> In the early days a young resident surgeon invariably went off to a basic science laboratory, frequently not related to a surgical department, to study some aspects of immunobiology and only after that experience would he or she take up clinical transplantation studies and activities.

The same seems to be true for a transplant nephrologist in contrast to a nontransplant nephrologist. In other words, just being able to measure and interpret the creatinine values in a transplant patient and thus assess the function of a renal allograft is not a sufficient qualification for nephrologists to work in the field of clinical renal transplantation. They must be educated in a way that is similar to that of the transplant surgeon mentioned above. This is also true for representatives of other related medical disciplines.

In summary, with regard to the definition of transplantation medicine, this new medical discipline has been created by the existence and cooperation of transplant physicians and surgeons coming from the different classic "mother" disciplines (surgery, urology, nephrology, etc.) but who, in addition, have been educated in the basic science disciplines concerned with organ transplantation.

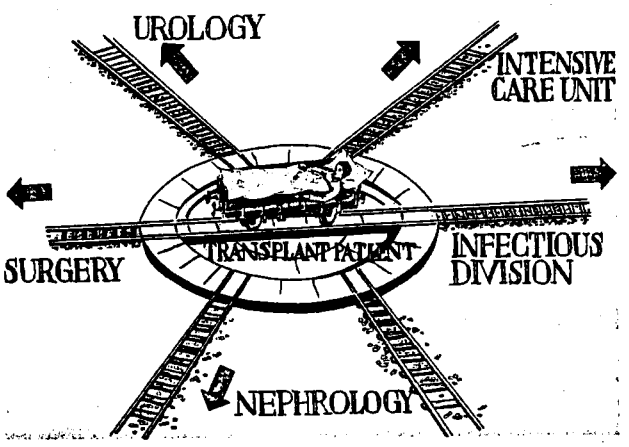

Fig. 1. Negative, undesirable structure of a transplant center: patient care as a kind of "shunting station"

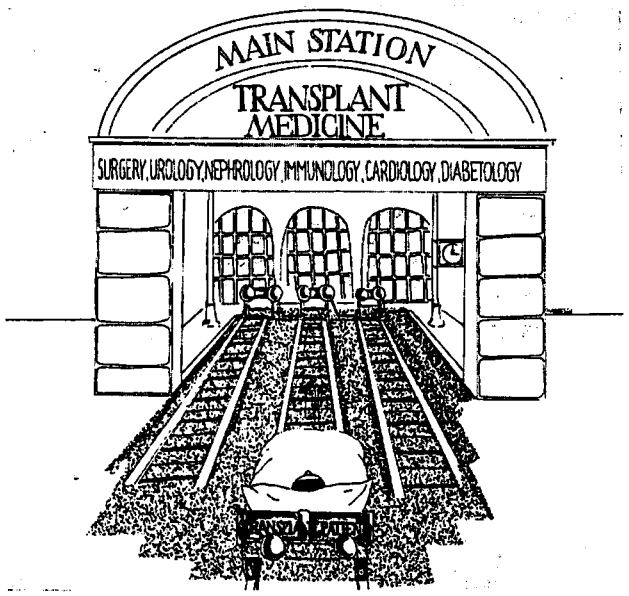

Fig. 2. Future structure of a transplant center: patient care as global, transdisciplinary transplant medicine "under one roof"

Justification of the existence of transplantation medicine as a discipline in its own right

Now why should the discipline of transplantation medicine comprise transplant surgeons, transplant physicians, and transplant immunologists who work full-time in transplantation? Why shouldn't the

Table 1. Arguments for the establishment of transplantation medicine

(I) *Guarantee of:*
• Continuity
• Scientific contributions
• Preparation for leadership
• Lower costs
(II) *Avoidance of:*
• Subspecialization (within the "classic" disciplines)
• "Stigmatization" of colleagues

transplant patient be treated sequentially by representatives from the different classic disciplines involved in organ transplantation, a modus operandi which has proven successful in many places throughout the world?

The implications of this question on patient care are illustrated in Fig. 1. What we see here is the patient in a kind of "shunting station." The figure shows that the renal allograft is sewed in at first by a surgeon and then by a urologist; postoperative care is performed by a nephrologist, infections are treated by another group of internists, and so on. In other words, there is no one medical doctor entirely responsible for the whole therapeutic procedure of organ transplantation with all of its consequences.

The criteria for the existence of a discipline like transplantation medicine as a forum for adequately educated transplant surgeons, nephrologists, and immunologists have to be set at a very high level. Our aim should be, as illustrated in Fig. 2, to establish a place like a main railway station where global and universal transplant medicine is practiced in an organ-transplanted patient.

Several points which favor a global, transdisciplinary structure for transplantation medicine seem worth mentioning in this context. They are summarized in Table 1.

Continuity of patient care

Close cooperation and integration among colleagues in different disciplines working as specially educated transplant doctors at an institution of transplantation medicine seems to me the only way to guarantee continuity of patient care, one of the prerequisites for achieving superior results in organ transplantation.

Scientific contributions

In my opinion, it is unlikely that major contributions in the field of organ transplantation in the near future will come from surgeons whose only work is grafting organs, or from nephrologists who restrict themselves to monitoring the function of renal graft post-transplantation. Moreover, the recent establishment in various places of transplant teams for nonrenal organ transplantation - teams in which the surgeon, for example, has strictly a technical role - is not likely to provide a source of essential or sophisticated contributions. This would, from a scientific point of view, imply the potential risk of a standstill in the growing field of organ transplantation. The first signs of such a negative development can already be seen. With the increased success of all organ transplants, and especially with the use of new immunosuppressive drugs like cyclosporine, many young residents try "to bypass the basic science year and plunge into clinical organ transplantation" [1]. According to Monaco, "whatever basic immunology they learn is picked up along the way."

All in all, the evidence suggests that only the establishment of transplantation medicine as a discipline in its own right will guarantee the future contributions needed in the field of organ transplantation.

Leadership and costs

The same arguments can be used with regard to the preparation of surgeons and internists for the leadership of transplant centers. However, I will not go into this in detail here.

Another obvious consequence of the establishment of transplantation medicine as a discipline in its own right, which does not need to be discussed in detail here, involves costs. There is clear evidence that any organizational system that recognizes transplantation medicine is less expensive than other organizational systems.

Subspecialization

Another interesting aspect associated with the acceptance of transplantation medicine as a discipline in its own right, and an aspect I would like very much to stress, is that of subspecialization in organ transplantation, something which is often regarded as an essentially negative aspect of this organizational system.

If we accept the institutionalization of transplantation medicine, which necessarily includes the performance of all types of organ transplantation in one place, then we have to accept the necessity for the cooperation of colleagues from all classic disciplines regarding special education in the basic and clinical aspects of organ transplantation, a situation

I referred to earlier as "global, multidisciplinary medicine." Within such a structural system, classic discipline-related care as well as special transplantation-related care of the patient is provided. This may well represent a kind of subspecialization, but then only from a surgical or an internist's point of view.

However, from an overall medical point of view, it really implies the opposite, that is, a step away from specialization. The reason is that, within such a proposed structure of transplantation medicine, many subspecializations like vascular surgery, urology, heart surgery, nephrology, hepatology, cardiology, and diabetology, which have already been separated from the original, universal discipline of general medicine, are once again joined together.

The main difference between the universal, global medicine provided for the patient 100-150 years ago lies in the fact that today we are dealing with a universal, global type of medicine for the organtransplanted patient!

"Stigmatization of colleagues"

It is well known that doctors actively involved in and highly qualified to perform clinical renal transplantation, such as urologists, surgeons, and nephrologists, gain a "negative attribute" with regard to their abilities as urologists, surgeons, and nephrologists. Colleagues begin to think along the lines of "this person is only able to perform renal transplantation; he does not cover the whole classic discipline!" Consequently, these doctors do not get the chance to become heads of classic disciplines. On the other hand, there are no life positions in the field of organ transplantation.

Not only this phenomenon but also its consequences have to be taken into account. Young residents become discouraged from working in the field of organ transplantation. Both developments imply more or less a negative influence on the quality of both clinical and research work in organ transplantation.

There appear to be only two possibilities for such colleagues: (1) to stop or reduce their activities in the field of organ transplantation or (2) to look for minor, nonuniversity careers. In either case, the discipline of transplantation medicine stands to lose some highly qualified and experienced transplant physicians.

I call this negative development in the field of organ transplantation "stigmatization of colleagues working in the field." A future discipline of global transplantation medicine that is structured in such a way as to include life (i.e., leading) positions could counteract or possibly even stop this development.

Conclusion

There is, indeed, room for transplantation medicine as a discipline in its own right in the future. Although this certainly will not concern every transplant center in a particular country, it may be worthwhile setting up such a discipline at a few large transplant centers. The aim would be to study the advantages as well as the disadvantages of such a structural system in the field of organ transplantation. Future development will show us whether we are on the right road or not.

Reference

1. Monaco AP (1987) Problems in transplantation-ethics, education, and expansion. Transplantation 43: 1