E000335

UI - 71065586
AU - Ingall JR
TI - Transplantation and the local physician.
LA - Eng
MH - Heart/*TRANSPLANTATION
MH - *Heart Transplantation
MH - Human
MH - Patient Care Team
MH - *Physicians
MH - Transplantation, Homologous
PT - JOURNAL ARTICLE
DA - 710210
DP - 1971 Jan 15
IS - 0028-7628
TA - N Y State J Med
PG - 248-52
ZN - Z1.107.567.875
IP - 2
VI - 71
JC - OBA
EM - 7103
SO - N Y State J Med 1971 Jan 15;71(2):248-52

Special Article

TRANSPLANTATION AND THE LOCAL PHYSICIAN

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Daily we hear about the fantastic achievements of our colleagues in the realm of transplantation. The most dramatic forays in this field undoubtedly involve replacement of the heart. I am sure the subject of the *practitioner's role* in facilitating this work is of considerable pertinence. He must perforce be part of the system, participating in it and making judgments which will bring the benefits of this realm of immunology, cardiology, and surgery expeditiously to the patient.

The role of the attending physician is vital. His judgment and participation in the clinical sphere, in decisions on which the patient and his family must agree, are of the utmost importance. An understanding of the complex factors that precede a decision for transplantation and a well-informed capacity for judgment must be considered our obligations in the future. This is particularly true in relation to the potential donors within an established protocol for transplantation.

There are many facets to be considered in effecting a well-disciplined system in the New York area, indeed in any area. We cannot afford to perpetuate the naïve attitude which compels us to seek a "first" in anything other than a team effort. In other words, a desire to perform a technically feasible bit of surgical skill before another group should not compromise judgment; the decision as to suitability of donor or recipient lies dominantly with the immunologist. The competitive approach can only serve to the detriment of the patient, and in the case of cardiac transplantation the outcome may be fatal.

How should we approach the problem? In this article I shall make a few observations and suggestions. These are offered in the light of my experience and knowledge of the Regional Medical Program for Western New York.

The technical expertise for performing heart transplants exists in more than one institution in Western New York. Experienced men who are enthusiastic about the possibility of doing transplants are dispersed throughout several areas. Where manpower is such a vital factor, indeed at a premium, I believe we should devise a consortium of these well-trained men at one center, agreed on by all, at which all the work should be done. I realize that this view will not be shared by all. Having mentioned this to one of my colleagues, it was termed by him "an incitement to riot." The concept of a transplantation institute, per se, which combines service and research is not untenable. These two can continue without artificial separation into categories. But it is vital that duplication in this sphere be obviated and a system be considered before and not after the first heart transplant.

What have we to consider in any plan? The following factors are essential: (1) the donors; (2) the recipients; (3) the immunology service; (4) the blood service; (5) the transplantation center to be developed (if any); and (6) the cost—not the least important.

A seventh point must also be considered: prevention. Are we in any way evolving these services to the detriment of prevention? Have we, in relationship to funds that are available, the right perspective on the problem? Have we, ethically and morally, given the correct stress to the overall problem? The matter of transplantation, however dramatic, especially in relation to the heart, tends to get out of perspective. The drama of spectacularly curing something which should never have been allowed to happen does tend to overshadow, indeed completely obliterate, the urgency of the less *dramatic* causative agent.

Rheumatic fever still exists in Western New York; this disease, and congenital defects, which predetermine the problems for which transplantation (or indeed any cardiac surgery) is required should be tackled with the aggression they merit. If we are to look for financial support in the sphere of cardiac or any other form of transplantation, then we must do so as a composite attack on the congenital and acquired problems. Many of our patients would not demand transplantations had the root cause for their deterioration been tackled.

Presented to the New York State Heart Assembly, May, 1969, at Buffalo, New York.

Donor group

Let me consider the first of the categories within the system I have mentioned, namely, the donor group. I put this first because the recipient group as such is well defined. Transplant recipients are usually confined in one of our hospitals and undoubtedly have had their immunologic portraits well detailed. They await donors with compatible templates. The donors, however, are a more complex problem, and we commonly have less time for preparation; often they are miles removed from the site of the potential recipient. The comparative urgency in heart transplantation has resulted in surgery first and typing afterwards. This is acknowledged to be the wrong sequence of events.

The larger the donor panel the greater the likelihood of a perfect match. Indeed, it might be said that a surplus should be devised; recipients in no sense are expendable whereas organs may be.

In our attempt to develop a panel of ideal donors, or most suitably matched donors, we are dependent on a large area as catchment for these people. Within such a large area it is important that the physicians of the entire region understand the system to be established. I would not like it mistakenly assumed at this point that the system is in any way defined. My purpose in bringing this point to your attention is, the larger the donor panel the more likelihood of better service to the patients in need. Good logistic planning must precede transplantation service. In other words, I feel that the basis of a good transplantation center is the donor reservoir, unpredictable as it is. This in turn must have speedy access to a central immunology service, a service which I have suggested must be clinically oriented but not divorced from research.

In studying the system and bringing it effectively into being we should decide, for example in the Western New York area, on a uniform, familiar procedure to transport the donor organ to the recipient. The experience of others in this realm should not be ignored. We have the capacity within the Regional Medical Program to bring about a cooperative venture which will facilitate this transportation.

The system and its application, dependent as it is on the expertise of the immunologists, cannot function unless those engaged in medical practice throughout the area understand how they can participate. The regional physician must know how his sudden-accident patient, close to death or just deceased, can be put into the well-planned mechanism for matching the organs available to the ideal recipients. It is my personal view that the two most important components of a heart transplantation center are the immunology service, on which we are absolutely dependent as surgeons, and the donor panel, without which nobody can receive an organ. The development of organ banks remains in an early stage, but eventually these may replace the "fresh" donors needed at the present time.

I am confident that the surgeons in Western New York are available and qualified to perform transplantations of heart, kidney, liver, lung, or pancreas. This would seem to me no problem. However, in developing the system that I have outlined, the donors must number as many as possible, and the immunology service must be well recognized as a center that functions twenty-four hours per day. There is no reason to differentiate one day from another, and the traditional concept of a week, indeed of days, might well need drastic readjustment. Our patients must be protected by high-quality tissue matching done at the earliest possible moment, without dangerous slack periods occurring on Saturdays, Sundays, and at night.

It is not my purpose here to discuss the problems within an immunology service, nor do I feel competent to do so. Basically, however, I think all must realize that the demonstration of the immune mechanisms, the difficulty with various sera, and the gradual improvement of the technics in speed and accuracy are growing apace, and that fragmentation in this sphere alone would undoubtedly be to the detriment of all. And I speak consciously and specifically about the patient here. We certainly need the enthusiasm present in departments that may be fragmented, but in this most important concept it is vital to have one department in one catchment area.

The construction of the donor panel is important; it can only be constructed with the approval of the majority of physicians in the region. The latter can only approve something which is understandable. The system must be clearly explained, with the logistics, the time intervals, the ethical considerations, the transportation, and other problems well defined. It would seem possible that in each of the major hospitals, certainly in those with a large load of traffic accidents and neurosurgical cases, the responsibility should lie with one member of the staff who seeks the judgment of the attending physician, or vice versa, when one patient is a possible donor, so that the earliest feasible notification of his pending contribution to another can be made. Undoubtedly, this macabre approach needs good public relations. The thought of our colleagues hovering around the bedside of the moribund patient like vultures is no image to give to the general public, nor is it, indeed, an image that would in any way be merited. We have to remember that our mission as physicians is to preserve life of good quality, and it is for this reason alone that we are interested in the transplantation of patients' hearts and other organs.

Another important factor in developing the donor panel is to inform the public of what can be done. They must feel assured that their loved

ones will not be eviscerated by surgical predators without consultation. I realize that the contact with patients' relatives is generally extremely good; on the other hand there is an aura of mystique about this transplantation business which has in some spheres alerted and frightened the general public. They alone are custodians of the bodies of their loved ones, and they alone can give permission. I therefore feel that the public at large must be confident and informed not only about the privilege of taking one organ from one person to another, but also that the organ that is being contributed by them will be used in suitable fashion by those taking it. This whole concept must also rely on an efficient closed-communication mechanism, the elements of which we already possess.

Recipients

Now I come to the recipient group, those people who sufficiently need a transplant to preserve a useful life. The majority of practicing physicians must have had the experience of a relatively young patient dying through sheer cardiac exhaustion or renal or hepatic failure. It is vital that a good panel be brought together, and this must include the regional physicians, to construct some guide lines, some criteria for the guidance of their colleagues throughout the region in making judgments on the recipient. Specification of the qualities of a recipient should certainly be made at this time; rules which we have had a part in formulating and to which we can refer: a set of decisions to guide us and support opinions for or against transplantation. Certainly these will be subject to pressure from time to time. Yielding to this pressure and calling it intelligent compromise would probably prejudice our results. I sincerely believe that a responsible group is required now to construct, with all the advice available, some initial rules for reference.

Heart transplantation has brought certain medical, ethical, and legal questions into critical focus. Paramount among these questions is the determination of death. The right of the prospective donor to the best possible medical care, a right which his potential role as an organ donor must not be allowed to abrogate, must remain sacred. The growing ability of medical science to maintain life in some form of biologic function for prolonged periods adds to the difficulty of defining the point of irreversible dissolution. The cause of death must be evident and irreversible. The fact of death must be established by adequate current and acceptable scientific evidence in the opinion of the physicians making the determination.

Transplantation center

Where would the recipient receive his transplant? I have tentatively suggested that there should be a transplantation center, an institution as a separate entity or as part of one of the established institutions where transplantation is done. The recipient group should all converge on this center, so that all things can be done with team work in an established fashion. I would reiterate that we as physicians must readjust our ideas on what is a working period. If we are truly interested in the patient from the point of view of speed, ideal match, and so forth, the transplantation service should develop the attitude that there are 365 days in the year. The traditional seven-day week is now defunct as far as service is concerned or attitudes to it. There are twenty-four hours in a day and none should be inconvenient or depleted as far as manpower or equipment is concerned. The laboratories and ancillary services must likewise be planned to fit into this concept without loopholes. The service that many of us are obliged to give, particularly when tired, getting up at night is no substitute for a good shift system. This applies especially to those involved in such a dramatic and important exercise as organ transplantation. I am perfectly well aware that there will be objections to this concept. I am equally aware that some of these comments apply to a first-rate accident service. When the transplantation service evolves, it is doubtful that we will perform more than, say, six heart transplants a year; but this figure will increase. I do not, however, feel that it is in any way justified that in such important matters a person or team tired from previous work or obliged to return from other involvements, which they undoubtedly must have, should be committed to the service of any such patients as I have outlined.

It may be worth reviewing the situation of transplantation as an entity; would it be reasonable that we as physicians in Western New York ask for a transplantation center rather than the old organ-oriented institutes so common throughout the world? Would it not be more imaginative to acknowledge we are dependent on an immunology service to devise this whole transplantation program around the typing and matching-up laboratory procedures which are such a vital component? We are dependent on the immunologist, and he even may be the focus of the entire system. There are many difficulties inherent in this view; on the other hand, the services to one organ are almost identical to the services to another. If we develop a kidney transplant unit at one point, a heart transplant unit at another, and liver and lung transplant units in yet other areas, we are not looking at the whole problem in the best systematic manner. The laboratory in which the typing, electromicroscopy, and pathology are carried on should probably be all in the same geographic situation.

I am well aware that in these days of good communication and good transportation a center such as we envisage has no need to be structurally at one

location. A system or an organization can be a single entity if the links between the components of the system are firm. I have long felt that the concept of all being one big happy family in one place is fraught with many difficulties, including petty squabbles augmented to internecine war. Indeed, many families work better when the members leave home than when they live with mother!

The unit concept, however, must be seriously considered when we talk of laboratories, transplantations, and ancillary services. We have neither the people nor the money to permit fragmentation, and the time is long past for competing to give this service: I would like to think the social scene alone as it has evolved will demand cooperation.

This problem has been discussed many times, and the consensus of those whom I have asked for an opinion would seem to favor a center for transplantation. Over-all, my colleagues, with some notable exceptions, have suggested that a center would be best organized around the immunology department. On the other hand, there are some immediate logistic problems which suggest the service involved in the transplantation work should be adjacent to the clinical transplantation center. This would need reappraisal by the surgeons, the immunologists, and the others as to the best way of doing this: in other words, in the words of a well-known limerick, "who does which and with what and to whom."

Administrative problems alone are legion, and it is vital to establish rules for the administration of the system, to devise a flow pattern so that the detailed administrative affairs repugnant to most of us involved in clinical matters be dealt with by someone of administrative authority and experience. To delegate the responsibility for this to such a person would undoubtedly alleviate the pressure that these affairs have on the components of any ststem, transplantation, blood management, or otherwise.

Immunology service

The third factor in the plan as again outlined to you earlier was the immunology service. The information explosion in all facets of medicine has been nowhere greater than in immunology. Indeed, it would seem that most of the Nobel prizes are going to those involved in this sphere or those closely adjacent to it. Giving the label "service" means that we can apply the criteria in matching that are already well established. This is the very meaning of the word "service." The science-to-service concept would be very well exemplified should a transplantation unit have this component built in.

We must realize, however, that to divorce the research and service elements in an immunologist's work is ridiculous, for undoubtedly the information that will emerge from the service given is in itself a valuable research entity and will provide information from which we can improve the services rendered. In devising a method by which the clinically applicable advances that emerge from the laboratory can come immediately to the patient's bedside, it would seem to me that the immunology component, laboratory, what you will, that is part of our transplantation services should be closely associated with the research entity, should in fact be indivisible from it.

We in Buffalo are fortunate to have world authorities in this sphere. Perhaps we have not done transplantations any earlier because the caution of these knowledgeable men has been an important factor in making sure that the material, or potential materiel, that our surgical colleagues have to work with is the best. As I said earlier, we are really looking for the best and not the first.

Dempster, Melrose, and Bentall[1] acclaimed the first human transplantation as a milestone in the treatment of heart disease. However, they also state that a long time and an immense effort lie between this first technical achievement and eventual routine therapeutic application. They point out that cardiac transplantation could have been done in their own hospital. This is not "sour grapes." The practical, moral, and legal consideration convinced them that such a procedure was unjustifiable when large numbers of people are on their waiting lists for more routine, acceptable, and proved therapies.

We must remember that medical practitioners must subject themselves to thoughtful introspection in ethical and humanitarian terms, considering whether prolongation of life, or in some cases prolongation of dying, is worth the price that is sometimes paid in human suffering and burdens on society.[2]

Blood service

A few words about the blood service. Undoubtedly, comprehensiveness of blood transfusion and adequate service is in itself an enormous factor in the region. This has been under discussion during the last few years, and I genuinely believe that very shortly the authorities who have studied this will be able to devise a system that will not only benefit the transplantation group, if and when this is established, but also the entire Western New York region. This is in itself an enormous subject, but it has to be considered in this matter under discussion.

Cost

Now I come somewhat uncomfortably to cost. This is certainly not the least important of the matters that concern us as physicians in the area. This includes the cost of the actual transplan-

tation, the cost of the service, and the cost of the rehabilitation of the patient. It is redundant to go into all the facets with which I am sure you are familiar, but in considering this matter we have to look on the problem from the point of view of the relatives, the patients, and the team involved.

It is unreasonable to underestimate the cost of anything these days, and if we are to make any judgment on the money required this should be done in relationship to previous experience which is considerable throughout the country, indeed throughout the world. The astronomical expense surely cannot be borne by the patient and the relatives. It will have to be decided that under no circumstances should the patient subjected to this procedure have to pay in part or in whole. If we solve the immunologic problem, which I think we can, and if we solve our team approach to the program, which is obviously possible, we must not fail to solve the problem of cost to the patient, who always comes first.

The rehabilitation services which embrace several disciplines, psychiatric and others, have to be given their part in the over-all plan. Lip service to their part in returning the patient to useful life is no longer acceptable.

Prevention

Finally, I would like to make a few comments about this transplantation concept that we have in mind, and try to bring the whole matter into some perspective in relationship to our approach to the health of the population at large. The question is, are we in any way evolving these services without considering the potential in the preventive aspects of our profession? We are, undoubtedly, going to be judged as were those who cured cholera and sent their patients back to drink infected waters. We will be judged on not only the transplantation that we are capable of doing, but also on whether we are in any way preventing the need for a transplantation.

Active programs in Buffalo and elsewhere have been conducted in prevention of kidney disease, especially in children, and in screening for rheumatic fever; it is an embarrassment, indeed a tragedy, that rheumatic fever should still exist in this region. In the genetic field, we have possibilities of obviating the occurrence of cardiac anomalies which eventually lead to the demise of their hosts. I would suggest to the reader that in thinking of a transplantation service, and certainly in deciding to apply for monies to carry on such a far-reaching and advanced immunosurgical exercise, that the mood of those in a position to support an enterprise of this nature is in no way disposed favorably to what has been called the "obsessive" blinker approach to a problem which ignores the root cause of the same. Even Washington has the capacity to learn, and recent fiscal parsimony has been most useful in stimulating thought.

If I can draw a topical comparison, it is an unimaginative effort to try and get underprivileged persons into medical school without improving the basic education of this group. We must show our intent not only to tackle the dramatic problems that have evolved but also we must show our wish to rectify the problems that underlie these, the predeterminants of the malady.

Conclusion

Some provocative statements have been made in this article. This is not written with any inflammatory intent; it is done in the hope that you may think of the problem and glean some information about it; that the practicing physician will voice an opinion that can help those in a position to do something about it. This can only come about if physicians in general remain informed about the problem of transplantation and see clearly where they fit into this dramatic picture.

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