Update on organ donation and retrieval in Spain

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Introduction

In Spain, cadaver organ transplantation has become an accepted activity in our hospitals. The tasks of the Spanish National Health System (Sistema Nacional de Salud) include all types of transplantation of solid organs, of tissues and of haematopoetic precursors.

The National Health System is, on the one hand, conscious that this modality of treatment must be offered obligatorily to all citizens living in Spain. At the same time, however, it is conscious that transplant units must be supported by a system devoted to the promotion of organ donation because progress in the development of transplant units is impossible without an increase in the number of organs obtained.

Over the last 10 years, Spain has developed an organizational system in charge of organ donation. Organ donation is perceived as a medical activity which must be implemented by medical professionals and by paramedical staff.

This system has been described previously and has proven highly efficient in achieving its objectives [1–4].

Evolution of organ donation

Since 1989, Spain has experienced a continuous increase in organ donation. In 1997, 1155 donors were registered, which implies an increase in the annual rate of donation to 29 donors per million population (p.m.p.). To this one has to add an additional increase of 10% which took place in the first 9 months of 1998 which increased the rate to 31 donors p.m.p. (Figure 1). These numbers are greatly above those registered in other countries (Figure 2).

The increase in organ donation was paralleled by an increase in multiorgan donation which has risen to >80% in the last years. This permitted a spectacular increase in the number of cadaver donor organs available for transplantation.

The profile of the organ donor has changed substantially in Spain over the last years [5]. With regards to the demographic characteristics of donors, it is important to underline that their age continues to rise in our country, as already stated before, so that 27% of donors were aged 60 years or above (Figure 3).

Cerebral haemorrhage is the most frequent cause of brain death, with an incidence of 55.3%. At the same time, we see a continuous and significant decrease in head injuries due to traffic accidents, down to 23.4% in 1997 (Figure 4).

Additionally, there is a significant and progressive decrease in family refusal to donate organs (Figure 5).

Evolution of transplant activity

Continuous success in organ donation has resulted in an increase in transplantation activity. This is undoubtedly the result of an increase in the activity and professional qualifications of all respective specialists in our country (Table 1).

Renal transplantation is largely based on cadaver donor organs. During 1997, only 20 cases amongst 1861 renal transplantations were living donor transplants (i.e. 1% of the renal transplantation activity). This is the second lowest percentage amongst the surrounding countries.

With respect to liver transplantation, the marked increase in transplantation activity has been followed by an increase in the patient waiting list. In 1998, it was higher than in the preceding years. It must be mentioned that the age of the recipients increased so that 25% of these patients are age 60 years or above.

The rate of heart transplantation is 8 p.m.p. This number has increased slightly in recent years. In this respect, Spain has an intermediate position relative to the surrounding countries. The main cause why this number has stabilized is the fact that the number of patients for whom the clinical indication for this procedure is given has not increased.

Lung transplantation has experienced a spectacular increase of 42% over the preceding year, i.e. a total of 108 transplantations, 81 of which were bipulmonary (75%). This illustrates the important development of this medical surgical technique in our country. The number of patients with an indication for this procedure increases. Consequently, the number of patients...
on the waiting list increases as well. For this reason, it is foreseeable that in the near future the number of lung transplantations must be increased.

The mortality rate on the waiting list varies between 5 and 9%, depending on the type of organ transplantation. The mean time on the waiting list for heart, liver and lung is 2, 3 and 6 months, respectively.

Systems of quality control

The transplantation co-ordinators increased their activity, with positive consequences on the process of donation and transplantation. Organ retrieval and transplantation can involve >100 professionals and involves 12–72 h of work. It must proceed according to a well designed protocol, after careful analysis of all aspects involved so that activities and means are directed to where efforts are necessary. This is certainly a very serious and fundamental process. We understand that if we miss a donor this can deprive patients of the opportunity to have their lives saved or to have the quality of their lives improved.

In Spain, there exists an infrastructure of transplantation co-ordination. Its main task is to detect donors and retrieve organs for transplantation. It is feasible to establish a system to evaluate the process and to identify areas in which efforts at improvement have to be focused. The representatives of the National Health System and its quality control commission (Unidad de Calidad), in collaboration with the ONT (Organización Nacional de Trasplantes), decided to include as of 1998 an evaluation of the process of organ donation in the programmes for Spanish hospitals. Beforehand, in 1996, a pilot study was performed. Its results and the experience gained allowed the development of a system of evaluation of the donation process. In this pilot study, 25 hospitals...
Fig. 3. Mean age of organ donors, Spain, 1996.

Fig. 4. Organ donors, causes of brain death.

participated [6]. The results document that up to 40% of donors are lost for reasons which can be remedied. Such reasons can be traced to intervention of health care personal involved (or lack thereof), e.g. failure to detect donors (20%) and, to a lesser extent, failure to maintain the donor in a suitable state (23%) [5]. The definitive study was started in January 1998 and comprises 40 hospitals. It is based on the firm conviction that important improvements can be achieved with respect to donor detection and with respect to the medical process of maintaining the donor in a state suitable for organ donation. During the first 6 months of 1998, we analysed the course of 349 individuals with brain death, i.e. 13.5% of deaths in intensive care units. As some of the major causes of failed organ donation, we could identify that cases had not been reported (4%), that families refused (23%), that there had been problems in maintaining the donor in a state suitable for donation (7%) and that medical counter-indications were present (30%).

Conclusions

Organ donation is a therapeutic modality which has been well established in all our hospitals with a licence for organ donation, retrieval and transplantation. The main obstacle interfering with the optimal development continues to be shortage of organs. Consequently, we believe that potential donors must be identified and that criteria for this activity must be applied which previously have been shown to be efficacious. This will
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Fig. 5. Family refusals in Spain, percentage of all interviews.

Table 1. Organ donation and transplantation figures in Spain 1990–1997

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<td>569</td>
<td>681</td>
<td>778</td>
<td>832</td>
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<td>% Multiorgan donors</td>
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<td>51%</td>
<td>64%</td>
<td>69%</td>
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<td>77%</td>
<td>83%</td>
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<td>1355</td>
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<td>1473</td>
<td>1613</td>
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<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.9</td>
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<td>495</td>
<td>614</td>
<td>698</td>
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<td>10.7</td>
<td>12.1</td>
<td>13</td>
<td>16</td>
<td>18.1</td>
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<td>Cardiac transplants*</td>
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<td>164</td>
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<td>Heart–liver transplants</td>
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<td>Uni-lung, bi-lung transplant</td>
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*Included heart–lungs transplants.

Further improve the current results, with the goal that the Spanish population will benefit from a safe, effective and well-developed therapeutic modality. This activity is based on an organization which directs its efforts primarily to professionalization of all those involved by promoting and facilitating their activities. It is necessary to identify weak points. These differ from one region to another and from one hospital to the other. It is also necessary to apply the techniques of standardization and continuous instruction. We think that these procedures are appropriate to minimize loss of potential donors during the complex process of organ donation.

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References