Original Research

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Organ transplantation in Romania: challenges and perspectives

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Abstract

Introduction. The interest in the field of organ transplantation and the first attempts at making experimental transplant interventions in Romania date from the very beginning of the 20th century. Nevertheless, the evolution of the donating activity and of organ transplantation in Romania has been confronted with a certain inconsistency and a lack of resources necessary to the development of the system.

Method. The aim of this study is to analyze the dynamics of the transplantation activity in Romania between 2000 and 2020. The study was accomplished through the analysis of available data corresponding to the above-mentioned period, which were published in the database of the National Transplant Agency, Eurostat and the Global Observatory on Donation and Transplantation. The data were processed using the MedCalc Statistical Software, version 14.8.1 (MedCalc Software bvba, Ostend, Belgium; http://www.medcalc.org; 2014).

Results. The activity of donation and organ transplantation in Romania has been maintained at a low level, with a rate of 3.44 donators pmp and a transplantation rate of 12.55 pmp, as reported for the year 2020. Romania remains at a transplantation rate of under 6.6 pmp, despite the considerable increase in the number of patients on the waiting lists, a fact which describes the picture of a relatively weak system, incapable of providing surgical interventions to cover the minimum needs that emerge within a calendar year.

Conclusions. Our study points to the fact that the transplantation system in Romania is confronted with a major deadlock. Romania holds the last-but-one place in the ranking of countries in the European Union on transplant activity. The major impediment is the donation rate, which continues to be way below the European average, in a society where the awareness of the necessity to donate is very low, bureaucracy is cumbersome and there is a high degree of mistrust in the medical system, where the equipment is lacking and the infrastructure is incapable of providing services adapted to the modern standards.

Keywords: transplantation, organ donation, brain death

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Introduction

The oldest descriptions of organ transplantation are to be found in the Greek, Roman, Chinese and Indian mythologies, where the bone, skin or teeth transplant are mentioned. In the sixteenth century, the Italian surgeon Gasparo Tagliacozzi used skin transplant for plastic surgery reconstruction, being the first to have described what we identify today as an immunological reaction to a graft obtained from another person. It was only at the end of the nineteenth century that the research in the field of organ transplant began to be studied more systematically and the findings were better documented. The first human to human transplant was performed in 1933, in the Soviet Union, by the Ucrainean surgeon U.U. Voronoy. The following significant discovery in transplantology was the result of the research activity performed by the British biologist Sir Peter Brian Medawar in the field of immunology. He investigated the problems associated with the skin homograft transplant and is therefore considered to be the founding father of the transplantation activity.

Between 1951 and 1952, Hume et al. performed nine kidney transplants at the Brigham Hospital in Boston. Despite using cortison for immunosuppression, all the grafts were rejected [1,2]. This problem was overcome by Dr. Murray, who performed the first kidney transplant successfully, by monozygotic twins [3]. In 1963, Dr. James Hardy performed the first lung transplant in Jackson, Mississippi [4]. The first attempt at making a liver transplant was made in 1963 by doctor Thomas Starzl, whereas the first successful one took place in 1967 at the Colorado University [5]. In 1967, Dr. Christian Barnard transplanted the first human heart in South Africa, to a 53-year-old patient, who survived 18 days after the surgery [6].

According to the data reported by the Global Observatory on Donation and Transplantation (GODT), in 2017 139,024 transplants of solid organs were performed around the world, on 135,686 patients. Between 2011 and 2017 the total number of deceased donors increased by 48.16% (from 25,273 to 37,447); among those, 78.7% were cerebral dead donors, and 21.3 % donors without cardiac activity. Kidneys (65%) and the liver (23%) are the organs with the highest transplantation rate [7]. Nevertheless, it is estimated that this number represents less than 10% of the global need of organs [8].

In Romania, the research in the field of organ transplantation and the first attempts at experimental transplant interventions date from the beginning of the twentieth century. The first successful transplant of a solid organ was that of a kidney from a living donor, and was performed by Professor Eugeniu Proca in February 1980 at the Fundeni Hospital. In 1992 the foundations of the first modern program for kidney transplant in Romania were laid. In 1997 the first liver transplant was performed by Professor Irinel Popescu, whereas in 1999 the first heart transplant was made by Dr. Şerban Brădişteanu at the Floreasca Clinical Emergency Hospital, which was shortly followed by a second one, performed at the Cardiac Surgery Centre from the County Hospital in Targu-Mureş, by Professor Radu Deac [9].

The evolution of the donating and transplantation activity in Romania was marked by a certain inconsistency and a scarcity of the resources necessary to the development of the system, because it depended on the health policies and the investment projects which have been influenced by a great variety of resources integrated in the national development programs.

Method

The aim of this study is the dynamic analysis of the transplantation activity in Romania. The objectives were: the analysis of the general donation rates and that of different organs; the analysis of the number of transplants which were annually performed; the analysis of the rate of refusal to donate on behalf of the families of the patients found in cerebral death, as an indicator of accepting the donation as a procedure by the population in Romania.

In order to achieve the objectives, we performed a retrospective study, by analyzing the data furnished between 2000-2020, published in the database of the National Transplant Agency (https://old.transplant.ro/Statistica.aspx) [10], Eurostat (https://ec.europa.eu/eurostat/web/health/data) [11] and Global Observatory on Donation and Transplantation - GODT (http://www.transplant-observatory.org/data-charts-and-tables/chart/) [7].

The data were processed with MedCalc Statistical Software Version 14.8.1 (MedCalc Software bvba, Ostend, Belgium; http://www.medcalc.org; 2014).

For the exhaustive assessment of the transplantation activity in Romania, the data concerning the organ donation were taken into account, both on deceased patients and living persons.

Results

Starting with 2000, the total rate of organ donation in Romania evolved from 1.12 donators and a transplant rate of 5.47 per million inhabitants (pmp) to 3.44 donators pmp and a transplantation rate of 12.55 reported in 2020.

The greatest donor rate ever reported in Romania was in 2014 with 6.9 donors pmp, organs which contributed to a number of 20.74 transplant interventions pmp. The minimum of the organ procurement activity was reached in 2003, with a reported donor rate of 0.36 pmp (Figure 1).

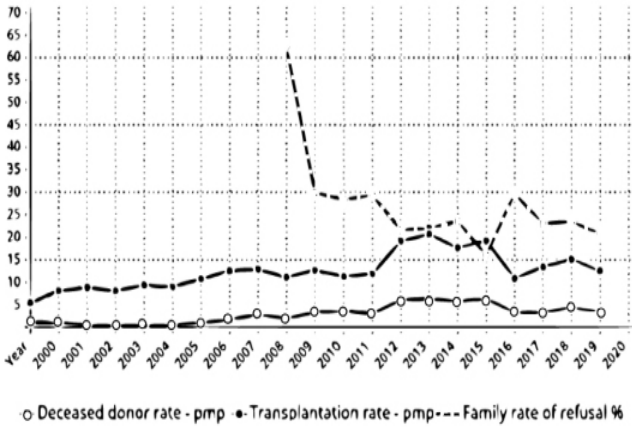

Figure 1. The evolution of the transplantation rate, of the deceased donor rate and of the refusal of the family to agree to the organ procurement.

The data concerning the waiting lists and the interviews with the families of the potential donors are available only for the period 2009-2020.

At the end of 2009 there were 2690 patients on the waiting lists. In the same year, 245 transplant interventions were made, which represents a cover rate of needs of 9%. The data reported for 2020 show that in Romania 5,225 patients were on the waiting lists. During the same year 241 organ transplant surgeries were performed, with organs obtained from 66 donors, which corresponds with a cover rate of necessary surgeries of 4.61%. The smallest waiting list was declared in 2009, with 2,690 patients, while in 2018 it registered a record number of 6,048 patients. The cover rates of necessary organs were to be found between 3.75% in 2017 and 10% in 2013 (Figure 1).

The rate of donating refusal on behalf of the families of the patients in brain death was at its highest in 2009 and dropped relatively constantly from 62.5% to 20.73% in 2020, the minimum being reached in 2016, when the refusal rate was of 16.19% (Figure 1).

The data regarding the number of used donors with a view to transplant is available for 2013-2020. The efficiency of using these donors was almost at its maximum level, with a percentage of 98% in 2016, 2017 and 100% for the rest of the period.

By analyzing the donating and transplant rates on each type of organ, we obtained the following results:

Kidney transplantation

The kidney transplantation activity was performed in the last 20 years in 5 medical centers, out of which only 4 are still active; each of them operates for 4.8 million citizens. The total rate of kidney transplants from alive and deceased donors evolved from 4.84 pmp in 2000 – the minimum value, to 9.06 in 2020, with a maximum of 14.35 pmp in 2014. Along the line, the kidney transplantation rate with organs obtained from deceased donors was higher than that of organ transplant from living donors. Thus, the kidney transplant rate from donors who were alive evolved from 3.86 pmp in 2000 to 2.81 pmp in 2020, the minimum being reached in 2014 (1.71 pmp) and the maximum in 2006 (7.64 pmp). The rate of the kidney transplantation from deceased donors evolved from 0.99 pmp in 2000 to 6.25 pmp in 2020, with a minimum in 2003 (0.72 pmp) and a maximum in 2014 (12.74 pmp) (Figure 2).

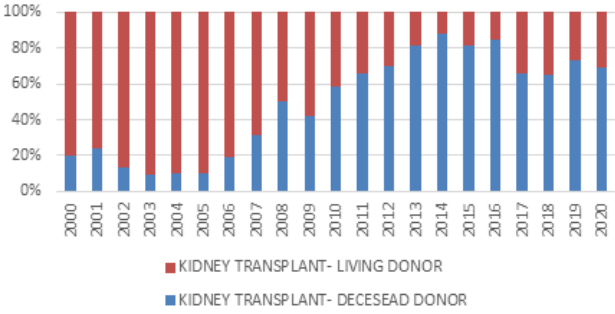

Figure 2. Kidney transplant: alive vs. brain dead donors.

Starting with 2009, the number of patients on the waiting lists increased constantly from 2,194 to 4,792 in 2020, while their mortality decreased from 1.09% in 2009 to 0.37% in 2020. The maximum level of mortality was registered in 2013 (8.68%) and the minimum in 2016 (0.22%). The number of new patients registered on the waiting lists was higher every year than the number of transplants performed during the same year. Thus, the cover rate of the need for kidney transplant decreased constantly from 9.2% in 2009 to 3.63% in 2020 (Figure 3, Figure 7).

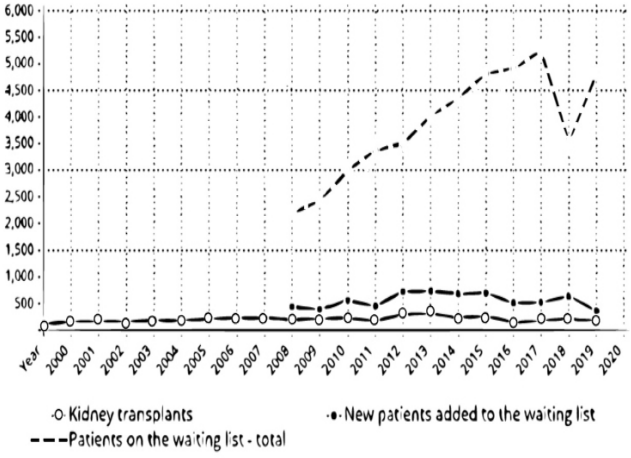

Figure 3. The evolution of the kidney transplant rate and of the waiting list.

Liver transplant

Until 2012, only one transplant center was performing activities of liver transplant. Subsequently, their number increased to 4 in 2020, each of these serving a population of 4.8 million citizens.

The total rate of liver transplant evolved from 0.36 pmp in 2000 to 3.23 pmp in 2020, the minimum being of 0.36 pmp (2000) and the maximum of 5.65 pmp (2014). The length of the waiting list varied every year from 338 in 2009 to 629 patients in 2019. In 2020 there were 410 patients in need of liver transplant. The mortality of the patients on the waiting lists was of 6.5% in 2009, and it reached a maximum in 2013 – 13.49%, while subsequently it decreased constantly to reach a minimum of 4.29% in 2019; in 2020 it reached a percentage of 7.7%. The number of new registered patients on the waiting lists was higher every year than the number of transplants performed in the same year. The cover capacity of the needs for liver transplants was not constant, the maximum value being reached in 2013 - 26.99%, whereas the minimum in 2019, 11.92% (Figure 4, Figure 7).

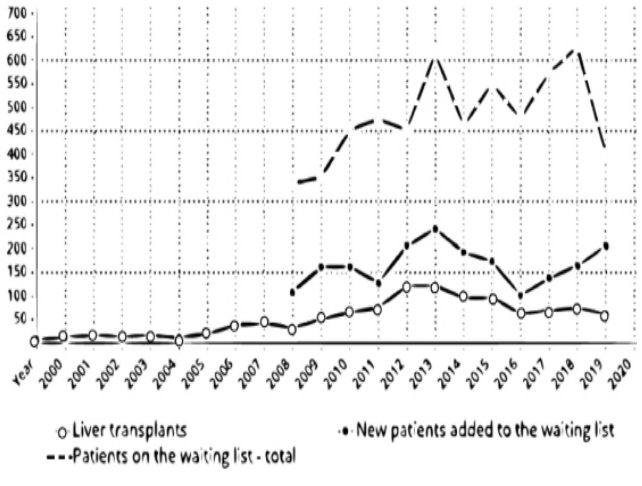

Figure 4. The evolution of the liver transplant rate and of the waiting list.

The rate of liver transplant from alive donors evolved from 0.36 pmp in 2000 to 2.76 pmp in 2020, with a minimum in 2005 (0.23 pmp) and a maximum of 5 pmp in 2015. The transplantation rate from deceased donors evolved from 0.18 pmp in 2001 to 0.47 in 2020, with a minimum of 0.09 pmp in 2002 and a maximum of 0.93 pmp in 2012 (Figure 5).

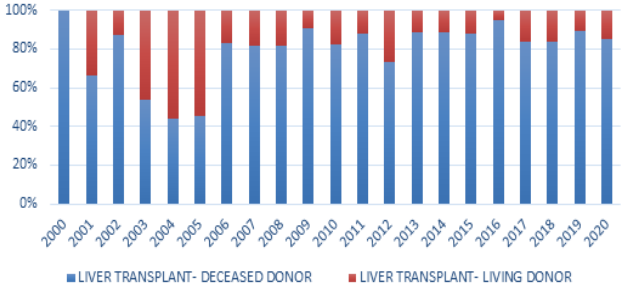

Figure 5. Liver transplant - alive vs. brain dead donors.

Heart transplant

In Romania there are 3 accredited centers for heart transplant, in 2020 only 2 of them were functional, each of them being responsible for approximately 10 million inhabitants. The activity of heart transplant was always inconstant, as the number of surgical interventions varied to a great extent from one year to the other, with a maximum of 11 heart transplants in 2016 (0.57 pmp) and a minimum reached in 2013, only one such surgery (0.05 pmp). The number of patients on the waiting list in 2009 was 158, reaching the minimum value of 27 in 2020. The maximum number of registered patients with a view to performing a heart transplant was of 214, in 2018 (Figure 6, Figure 7).

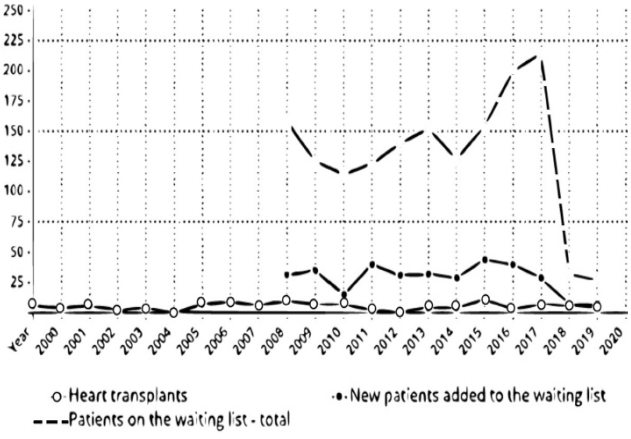

Figure 6. The evolution of the heart transplant rate and of the waiting list.

The number of new patients registered on the waiting list was higher every year than the number of transplants performed during the same year. The maximum value of the mortality of patients on the waiting list, of 57%, was reached in 2011, the minimum being reported in 2014 with 1.97%. In 2020 it came to a value of 14.8%.

The coverage rate of the necessity of the heart transplant reached a maximum in 2019, when 18.75% of the waiting patients received a transplant, the minimum value being in 2013 with 0.7% (Figure 7).

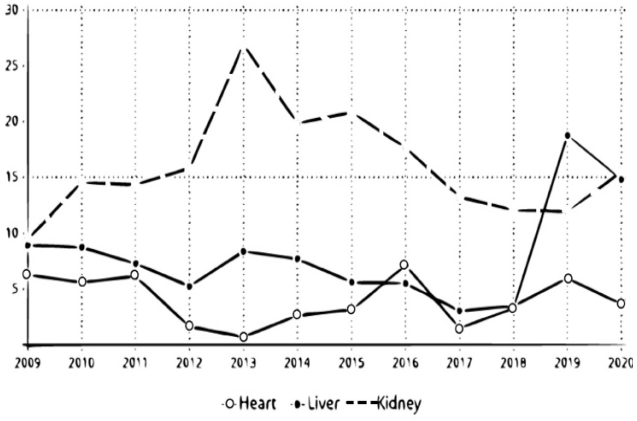

Figure 7. The capacity to cover the needs – number of kidney, liver and heart transplants compared to the waiting list.

Lung and pancreas transplantation

Lung transplant has been performed in Romania in one single transplantation center, coming to a total of 8 transplants: 4 in 2018, 3 in 2019 and only one in 2020 . The maximum number of patients on the waiting lists was of 6 in 2018 and 2019; 3 patients were waiting for a lung transplant in 2016, 4 in 2017 and 5 in 2020. During the other years there were no waiting lists for lung transplantation. The mortality rate on the waiting lists reached values from 0% (2017) to 40% (2020).

Between 2004-2007 there were 7 surgeries with pancreas transplant in three transplant centers, whereas between 2014 and 2016, 14 such surgeries were performed in two accredited centers. The number of patients waiting for a pancreas transplant was between 44 in 2013 and 132 during the years 2016 and 2017, respectively. Starting with 2018 it was no longer necessary to make any waiting list for this type of transplant. Currently there is only one center which could perform the activity of pancreas transplant.

Discussion

Our study shows that the activity of donating and transplanting organs in Romania is maintained at a low rate, with numbers such as 3.44 donors pmp and a transplant rate of 12.55 pmp reported in 2020. Romania is situated on place 42 on the list of states which report to GODT data referring to the donation and transplantation activity, where the top leader are the United States of America with 38.03 donors pmp and the transplant rate is of 120.59 pmp. Within the European Union Spain is the top leader, with 37.97 donors pmp. Romania is ranked 26 of 27 member states, the last place in the ranking being occupied by Bulgaria [7].

From the viewpoint of success in using the sampled organs, The United States of America reported in 2016 an average of 3.54 prelevated organs and 3.06 transplanted organs per donor, with a total of 4,859 (13.8%) subsequently refused because of dysfunctions in the organs, of infections or anatomical abnormalities. During the same period, Romania used 98% of the obtained organs under the constraint of an extremely reduced availability [7].

Regarding kidney and liver transplant, the evolution of the transplantation rate from brain dead donors was higher than that of live donors , a fact which describes a trend which is in line with the one registered in other European countries and in the U.S.A. [7,12].

The real need for transplant organs becomes objective through the comparison of the number of patients on the waiting lists reported in one year, with the number of transplant surgeries performed during the same period. Our study indicated the fact that in Romania the real need of organs for transplantation is much higher than the number of donated organs. Romania maintains itself at a transplantation rate of less than 6.6 pmp, despite the considerable increase in the number of patients on the waiting lists, a fact which describes the image of a helpless system, incapable to ensure surgeries which satisfy at least the needs which appeared during one calendar year [7,10].

The mortality rate of patients on the waiting lists in Romania, reported in 2019, is 1.14%, significantly greater than the one reported in the U.S.A., of 0.04%. These values point to the precarious situation of the Romanian medical system. Nevertheless, Lewis et al. approximate that at the level of the European States the real situation is much darker. They approximate an average of the death rate of patients waiting for a transplant at 15–30% [12].

The health state of the Romanian population is in continuous decline. The mortality due to kidney disease increased from 12.4 to 19.91 per 1000 inhabitants between 2011 and 2018, the number of patients included in the national dialysis program increased by almost 3000 in the last decade, a fact which is reflected in the expansion of the waiting lists [7,10,11]. Although the kidney transplant program proved to be the most successful one from the viewpoint of coverage rate of needs, the inability of the national transplant system to cover the needs is to be seen in the much greater number of patients who are newly registered on the waiting list during one single year, as compared to the transplants performed during the same year. The response to necessities dropped by three times between 2009-2020, as compared to the over-dimensioning of the waiting lists and maintaining the transplantation activity at a rate of less than 300 kidney transplants annually. Despite the fact that the number of kidneys obtained from the deceased donors increased constantly in the last years, it was counterbalanced by the decrease

in organs obtained from donors who are alive. A favorable aspect is represented by the decrease in mortality among the patients found on the waiting lists, a fact which is due to the extension of the dialysis centers and of the medication prescribed [7,10].

The mortality due to cardiovascular diseases remains undoubtedly the highest, as it follows a rising trend from 743 to a thousand inhabitants in 2011 to 767 in 2018 [11]. In Romania, heart failure is an extremely severe condition, most of the times with a dramatic evolution, associated with a risk of 36% of re-hospitalization or death within the first year from the diagnosis [7,11]. The coverage rate of the heart transplant needs was maintained constantly under the value of 7%, which means that only one in 13 patients waiting for a transplant could use the opportunity for surgery. There was an exception between 2019 and 2020, when the efficiency increased, but not because of the increase of the transplantation rate, rather because of the decrease in the number of patients on the waiting list due to the yearly mortality rate of up to 15% of these patients, to the COVID-19 pandemics, as well as to the lack of interest and mistrust of the population in the Romanian transplant system [2,7].

Despite the fact that the abdominal surgery services are the most accessible surgical services to the population, liver transplantation registered a decline in the last decade [7]. Although the number of patients annually added to the waiting list did not increase considerably, the availability of new treatment to prolong their survival periods lead simultaneously to the increase in the number of waiting patients. As in the case of the other types of transplant, the number of surgeries performed in one calendar year is always much smaller than the number of new patients registered on the lists during the same year [10].

There are several factors which contribute to the bad functioning of the Romanian transplant system: underfinancing, the lack of specialized staff, the unequal distribution of the resources between different medical centers, but most importantly, the very low organ donation rate [13].

The factors which generate a low level of organ donation and procurement in Romania are: the increased level of viral infections, the poor medical education and the faulty information-delivery process, the absence of organ procurement centers and of tissue banks and the need to obtain the consent of the family for organ donation [14-16].

Communication between the various structures of the transplantation system in Romania is also difficult, as the doctors from the Intensive Care Wards and Hospitals, from Neurology and Neuro-surgical Departments complain that there is a severe miscommunication between those who identify the donors and the professionals working in the specialized centers where the actual transplant takes place [13].

Spasovski et al. have made an analysis of the factors which prevent the progress of the transplant systems in the Balkans, including Romania. They identify as explanation the fact that officially-presented data are incomplete and reflect the real situation inadequately, which leaves room for speculation. Furthermore, Spasovski et al. highlight a correlation between the reduced transplantation activity and the precarious economical situation. They also identify many other factors which have a negative impact on the transplantation rate, such as: the lack of a good organizing system with the responsible authorities, the poor awareness of this issue among the population, educating and motivating the population for transplant, the lack of competent teams to remove the organs, perform the transplant and coordinate transport between hospitals. The authors give Croatia as an example, because it managed to consolidate the basis of the infrastructure of the national transplantation system, being a world leader in kidney and liver transplantation in 2010. Thus, the measures proposed for improving the regional donation and transplantation rates include the promotion of both living and deceased donation through public education, making updated and accurate waiting lists and increasing the number of instructed transplant coordinators in hospitals. Apart from the effort of professionals, government support is also necessary to allocate the funds for each deceased donor, updating the laws and modernizing the national coordination organizations, as well collaborating with regional and European organizations such as the Regional Health Development Center (RHDC) and South-eastern European Health Network (SEEHN) [17].

The family members, faced with signing the consent for donating the organs of a brain dead family member face conscience problems, one fear being that of a "wrong diagnosis of brain death" and "the hope that maybe there is still a chance that their situation improves" [18,19]. Nevertheless, we could say that the Romanian society evolves faster than the infrastructure and the donating and transplantation system, a fact which we have documented in our study through the decreasing rate of the refusal of the family to donate the organs of a brain dead patient, from 62.5% in 2009 to 20.73% in 2020. This stands for an important progress in the ability to understand the problem of donating by the population and a greater receptivity to accepting the concept of brain death and donating the organs for transplant.

In Romania, the process of obtaining human tissues and organs from the deceased may only begin after declaring the brain death and only with the written consent of the members of the family, in the following order: spouse, parent, child, sibling [20]. Until now there was no electronic system which could function based on donator cards, as foreseen in the existing law, but in case the deceased was registered in the National Register of Organ Donors, the family's consent for organ donation is no longer necessary [20].

In 2007 there was a legislative debate in the Romanian Parliament on a legislative proposal to introduce the presumed consent to organ donation. The discussions on the law were accompanied by public debates on this subject. The main identified arguments in favor of implementing this type of politics were: the decreased rate of organ donation as a contrast to the long waiting lists, avoiding the loss of organs which could be used, the avoidance of responsibility and the stress the family endures in giving the consent, simplifying the bureaucratic procedures. The counter-arguments stressed the unethical character of this solution, the risk of human rights violation and maintaining the public ignorance, exploiting the disadvantaged people with a reduced life expectation, weak results in using the organs, but also the huge negative effects on the public opinion. The debates concluded with opinions against a politics based on presumed consent, a fact which proves that the Romanian society is not yet prepared for this change [15].

The public perception on organ donation and transplantation are often based on social-demographic and cultural factors; there is a major discrepancy between the availability and the need of organs for transplantation, as showed by the GODT [7].

With the aim of structuring the social causes which contribute to a low donation rate and, as a consequence, of transplantaton, Moloney and Walker (2002) analyzed the social concepts and the dilemmas regarding the subject. The authors showed that there is "an unanimous agreement on the noble idea of organ donation", nevertheless, when people try to elaborate the reasons which lie at the basis of this opinion, in their mind appear "a series of worries regarding brain death, mutilating the body of the deceased, human organ trafficking and the role of the medical profession in organ donation and transplantation" [21].

A qualitative study of the online discussions in Romania regarding organ donation showed that the syntagm "organ donation" is associated in the highest degree with terms such as "life" and "death" and, also, with terms such as "family", "organ", "saving", "brain death" and "person". Although the concept of donating has in many cases a positive connotation, a strong association was found also with the term "money", a fact which could suggest the worries within the Romanian society regarding the "unjust allocation of organs and the financial reward for it". On the other hand, the syntagm "organ transplant" is associated especially with words such as "list", "declaration", "doctor", "law" or "consent", which refer mostly to the practical aspects of the transplant, especially with the pre-surgery requirements". The authors interpret these associations as a proof of the bureaucratic obstacles in the process or registering as an organ donor, in the absence of a clear legislative frame. The same study concludes that, among the reasons which lie at the basis of a contrary attitude to post-mortem organ donation is the mistrust in the medical system, and the family is the pillar which can play the role of a mediator between the positive aspects of the donation and the deficiencies of the medical system. Moreover, regulating the statute of the donor is necessary, so that the focus lies on the important problems surrounding the donation act [18].

The Project *Living Organ Donation in Europe* (EULOD) focused on the identification and analysis of the barriers to the living donation in Europe and formulating proposals to improve the donation rate. In this project two target groups were organized in Bulgaria and Romania (countries ranked on the last places in the EU as donating rate of transplant organs), which included transplantologists, nephrologists, the lawyers and the representatives of the patients. Both the Romanian and the Bulgarian participants underlined the merits of their legislation, which regulates the organ donation by living donors, but remained skeptical regarding the possibility of offering financial compensations to living donors, which they considered to be steps towards organ trade. The Romanian participants highlighted the institutional obstacles in donation and transplantation activity, whereas the Bulgarian participants identified the financial obstacles as a major barrier to improving the organ transplantation system. The similarities and the differences between the two countries show that the measures destined to stimulate donation in Europe must take into account the specific contexts and the cultural, moral, political and legal characteristics of the respective countries [22].

The reluctance to organ donation was highlighted also among the future doctors in Romania. A cross-sectional study performed in 2013 on a sample of 140 medical students from the Medical and Pharmaceutical University of Targu Mures, have showed that 38.6% of participants are undecided or against donating organs of a close relative, in spite of the fact that 81.4% would agree to the donation of their own organs. The refusal is supported by: the wish to maintain the bodily integrity of the deceased, the respect toward the deceased, religious reasons or the lack of trust in the medical and the transplantation system [23]. Women were more inclined to discuss about the organ donation and transplantation, while the married participants hesitate more when they are asked about donating the organs of a close person. A significant difference exists also among the students from the pre-clinical years of study and the last year (60% as compared to 72%), a fact which suggests the role of education, professional training and the contact with the patients and the medical system on the perception on donation and transplantation [23,24].

A good example in sustaining the hypothesis according to which the environment and educational factors influence the donating rate of the organs was offered by the study of the communities of Romanian immigrants in Italy. Starting from the fact that in the last 20 years, both the number of brain dead immigrants as well as that of those in need of organ transplant was on the increase, Guermani

et al. analyzed the problem of organ donation within the immigrant community between 2004-2011. The average of refusal towards the organ donation for transplantation among the immigrants and Italian citizens taken altogether was of 30%, of the refusal to donate among the immigrants (all nationalities) was of 37%. Within the community of Romanian immigrants, the rate of refusal to donate was of 21.2%, smaller than the average – a fact which suggests that through changing the environment and the education it is possible to make real progress regarding the increase of the donor rate [25].

Regarding the improvement the strategies on organ donation and transplantation, Romania makes small and slow steps in the direction of the other European countries. Within the project "International Cooperation for the Development of Activities Related to Donation and Transplantation of Organs in the Region" financed by the European Council and implemented in countries from the Black Sea area, it was found that in Romania there is no sustained campaign which promotes organ donation and over the years, during the development of the program, there were numerous information campaigns in schools and universities, in countries such as Turkey, Georgia, Azerbaidjan and the Republic of Moldova, which demonstrated more important progress regarding the donating rate [16]. During this project it was noticed that Romania managed to evolve through the establishment of organisations and ethics commissions to coordinate the donation and transplantation activity at the national, regional and local levels, of establishing international agreement with a view to granting and receiving organs as well as establishing a database with potential living donors and a program to monitor these possible donors along their lives. The National Transplant Agency has an important role in the coordination of organ procurement by creating databases with brain dead donors. Progress was also made in the context of establishing a legal basis of the organ donation and transplantation and promoting laws to regulate organ trafficking and to organize educational programs for the teams which are responsible with organ procurement and transplantation [16].

Conclusions

Our study indicates that the Romanian transplantation system finds itself in a major deadlock. The increase in the demand and need of organ transplantation based on the increase of the life expectation and of morbidity, as compared to the capacity of the transplantation system to meet those needs, determine the low ranking of Romania within the European Union in terms of transplant activity, namely the last-but-one position. The main impediment is the donation rate, which maintains itself at levels far under the European average, in a society which is not made aware of the donating necessity, suffocated by bureaucracy and mistrustful of the medical system. Studies are necessary to deeply analyze the factors which would contribute to the openness of the Romanian population to donate organs for transplantation purposes, with a view to implement sustainable long-term projects in order to increase the donation rate. Another remaining problem to be analyzed is the extent to which the infrastructure and the human resources existing in Romania are adequate for a transplant activity which corresponds to the needs.

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