Forensic Science International 237 (2014) 131–136

Contents lists available at ScienceDirect

Forensic Science International

journal homepage: www.elsevier.com/locate/forsciint

Limitations of cadaveric organ donation on judicial cases and problems confronted in autopsy: Istanbul data in comparative perspective

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ARTICLE INFO

Article history:
Received 18 October 2012
Received in revised form 28 October 2013
Accepted 20 December 2013
Available online 19 January 2014

Keywords:
Judicial deaths
Forensic autopsy
Cadaveric organ transplantation
Forensic medicine expert

ABSTRACT

Organ transplantation is one of the most important services of modern medicine to the humanity. In judicial death cases the interaction between judicial needs and transplantation needs is inevitable and both should be provided in a short time before the decomposition of the body. Thus, the description of this interaction and the algorithm which should be carried out to manage these cases are important.

Aim of this study is to determine the problems confronted in forensic autopsies and to determine what to do for both judicial processes' and cadaveric organ donations' not becoming limited due to each other. With these aims, autopsy case archive of the Council of Forensic Medicine Istanbul Morgue Department was reviewed, between the years 2009 and 2011, to reveal the number of organ donors among autopsy cases and also to find out the judicial problems confronted during autopsies.

Among 12,016 judicial death cases referred to Istanbul Morgue Department in 3 years, 35 cases were found to have undergone cadaveric solid organ harvesting procedure and 307 cases cornea-only harvesting procedure.

Manner of deaths for organ donor cases were blunt trauma due to traffic accident in 20 cases, firearm injury in 3 cases, stabbing in 2 cases, suspicious criminal battery in 4 cases and fatal falls in 5 cases. Only 1 case was suspected to have died due to high dose insulin administration.

Through the whole data presented in this study, it can be concluded that consulting with the Forensic Medicine Expert not only for the autopsies but also during the clinical process of a judicial case, who is a candidate to be an organ donor, is absolutely important. The early contribution of the Forensic Medicine Expert would provide help to plan both the judicial process and the transplantation process which needs urgent decisions. A Forensic Medicine Expert may be an organ harvest team member performing initial investigations on the cause of death and collecting some of the toxicological screening samples when needed.

1. Introduction

Organ transplantation is one of the most important services of modern medicine to the humanity. With the developments in the medicine science, the number of transferrable organs and tissues increased by years. The first successful kidney transplantation was performed by Dr. Joseph Murray and Dr. David Hume in Boston in 1954. In the years, almost all organs were tried to be transplanted and successful results were achieved [1].

In Turkey, 2,502 kidney, 695 liver, 86 heart, 18 heart valve, 3 lung, 29 pancreas and 3 intestine transplantations were successfully performed in 2010, while the demand for those organs was much more [2]. Demands for kidney, liver and cornea were 17,812, 2000, and 5076, respectively [3] (Table 1).

According to the 2007 and 2008 statistics data of The International Registry of Organ Donation and Transplantation (IRODaT); in Turkey, the ratio of cadaveric solid organ donors (CSODs) was 3 per-million-population (pmp) in 2007 and 3.6 pmp in 2008. The ratio of living organ donors was 16.9 pmp in 2007 and 24.1 in 2008 [4,5]. The number of cadaveric transplantations was reported as 5349 between the years 2002 and 2010. For 743 cases cadaveric and in 2593 cases living organ transplantations were performed in 2010 [3]. The cadaveric donor rates in some other countries were 24 pmp between 1999 and 2008 (Uruguay), 13.1 pmp in 2001 (Germany), 13 pmp in 2010–2011 (United

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http://dx.doi.org/10.1016/j.forsciint.2013.12.021

Table 1
Number of organ transplantations per years, Turkey (1).

	2002	2006	2007	2008	2009	2010
Kidney	550	949	1302	1665	2362	2502
Liver	159	319	473	602	593	695
Heart	20	45	61	50	55	86
Heart valve	15	25	56	29	38	18
Lung	0	0	1	0	7	3
Heart and lung	0	0	1	3	0	0
Pancreas	0	7	9	10	18	29
Small intestine	0	0	0	3	1	3
Total	744	1345	1903	2362	3074	3336

Source: General Directorate of Curative Service, Ministry of Health of Turkey.

Kingdom), 34.4 pmp in 2009 (Spain), 32.6 pmp in 2006 (Latvia) and 11.4 pmp in 2011 (Israel) while the deceased donor organ rates were 90 pmp (Belgium) and 70 pmp (Spain, Portugal, Austria, Norway) in 2008 [6–13]. OPTN/SRTR 2011 Annual Data Report in the U.S. revealed that the number of eligible deaths for organ harvesting was 9023 in 2011 and 72.9 eligible donors per 100 eligible deaths were converted to organ donors [14]. In Iran, a total of 1546 deceased donor organ transplantations were performed between 1988 and 2006 and in Saudi Arabia a total of 2050 deceased donor organ transplantations were performed between 1993 and 2007 [15,16].

Currently there are 9 District Transplantation Coordination Centers in Turkey while there are 59 kidney, 34 liver, 14 heart and 2 lung transplantation centers [3].

According to the data of past 4 years, 199 cadaveric, 1928 living organ transplantations were performed per year. Besides, there were 17,812 people waiting for kidney, 2000 for liver and 5076 for corneal transplantation in 2009 [3].

Besides, not only in Turkey but all over the world demands are always greater than the donations. For instance, in the U.S. alone, approximately 19 people on the transplant waiting list die every day since many life-saving cadaveric organs are not procured [17]. At the end of 2004, the prevelance of patients with end-stage renal disease was 2045 pmp in Japan, 1505 pmp in North America, 585 pmp in Europe, 190 pmp in the Middle East, and 70 pmp in Africa [15].

With these numbers and increasing demand for organ transplantation, the interaction between judicial needs and transplantation needs is inevitable and both should be provided in a short time before the decomposition of the body. Thus, the description of this interaction and the algorithm which should be carried out to manage these cases are important. In literature, there are studies – although some of them are from previous decades – related to this interaction through many different forensic aspects of organ donation. Topics on this interaction are 'definition of death', 'decision for different consent types', 'malpractice elimination or determination for possible infection or malignancy transmissions', 'decision for scientific experiments and studies including surgical training and pathological training', 'denials of prosecutors, medical examiners or coroners in different medicolegal systems for transplantation process in judicial cases', 'role of forensic nurses in managing both medical and legal requirements', 'discussions on legislation and protocols for organ transplantation' and 'new official issues related with identification like allotransplantations of the face or transplantations of the bone marrow'[17–43]. However, any evaluation data from the autopsy view of point for transplantation procedures could not be found except the study of Wolf and Derrick stating the loss of evidences during organ harvesting process of 5 cases [44].

Aim of this study is to determine the problems confronted in these autopsies and to determine what to do for both judicial processes' and cadaveric organ donations' not becoming limited due to each other. With these aims, autopsy case archive of the Council of Forensic Medicine (CFM) Istanbul Morgue Department was reviewed, between the years 2009 and 2011, to reveal the number of organ donors among autopsy cases and also to find out the judicial problems confronted during autopsies.

2. Material and methods

In Istanbul, a population of more than 17 million, all forensic autopsies are performed in the Morgue Department of the CFM. Prosecutors mostly go to the death scene or hospital where the death occurs, perform initial judicial investigations and send the body to the Morgue Department for determining the cause of death. All referred judicial cases undergo autopsy at the Morgue Department.

In this study, the archive files of 12,016 autopsy cases between the dates 1st January, 2009 and 31st December, 2011 which had been referred to the Morgue Department for determining the cause of death were retrospectively analyzed and the cases that had undergone organ or cornea harvesting procedure were reviewed in a detailed way. This analysis showed us how many judicial cases were CSODs in Istanbul in this time period.

The demographical, judicial and clinical data of the cases that had undergone transplantation procedure were collected. All harvesting documents available in the file were checked and any judicial record was looked for to see if it was present or not. Collected data were analyzed through descriptive statistics in SPSS 16.0 program. Thus, the results were presented with significancy measures but discussed through concrete suggestions.

3. Results

Among 12,016 autopsy cases of the Morgue Department in 3 years, 342 (2.8%) cases that had undergone cadaveric organ and/or cornea harvesting procedure were found. Thirty-five of 342 cases were CSODs (with or without cornea) and remaining (307 cases) were cornea-only donors (CODs).

The numbers of harvested organs among 35 organ donor autopsy cases are presented in Table 2. Distribution of cases according to types of injuries and causes of deaths are presented in Table 3. Causes of deaths among cornea harvested cases are presented in Table 4.

4. Findings obtained from archive files

4.1. Cadaveric solid organ donors

Age groups of CSODs are presented in Fig. 1. Eight CSOD cases were female where 27 cases were male.

Thirty five judicial cases were undergone cadaveric solid organ harvesting procedure in Istanbul in last 3 years. According to the data evaluated:

In 26 of 35 CSOD cases prosecutor decided to perform autopsy after external examination

- In 3 of these 26 CSOD cases, forensic medicine expert (FME) examined cases prior to harvesting procedure and decided that there was no judicial problem about harvesting organs.
- In 23 of these 26 CSOD cases the prosecutor and the physician performed external judicial examination after the harvesting procedure.

Nine of these 35 cases were referred to the Morgue Department without an external examination

- In 8 cases, prosecutors were informed by phone prior to the procedure. In those cases, the prosecutor ordered to move the deceased to the Morgue Department for autopsy but after all harvesting procedures and with all documents about the