



Out-of-Hospital Tissue Donation: Multidisciplinary Donor Circuit in a Forensic Institute

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ABSTRACT

Objective. We aimed to implement an out-of-hospital system of generating donors that increases donation and answers the growing demand for tissue for therapeutic purposes.

Material. The Catalan Health Service issued the 4/2015 instruction promoting the integration of the donation network through collaboration with the Donor Center of Catalonia (DCC). The creation of DCC facilitated the signing of an agreement between The Blood and Tissue Bank, the Department of Justice of the Generalitat de Catalunya, the Emergency Medical System, and the Hospital Clínic Barcelona for the procurement of tissues in the Institute of Legal Medicine and Forensic Sciences of Catalonia (IMLCFC), where the autopsies of all judicial deaths in the province of Barcelona are performed.

Methods. The Emergency Medical System informed the DCC of those instances that ended with the code “deceased.” DCC assessed the possible donor on arrival at the IMLCFC, checked the medical history through the shared clinical record, and obtained family consent by telephone interview. If consent was obtained, then judicial authorization was sought.

Results. In 2016, 152 donors of corneas were obtained (9.7% of the annual amount in Catalonia), 149 in 2017 (9.4% of the annual amount), and 133 donations in 2018. At the end of 2017, we started multitissue retrieval and obtained in 2018 a total of 76 donors.

Conclusions. Out-of-hospital tissue donation in a forensic institute is possible. In less than 3 years, IMLCFC has become the third largest eye tissue contributor among the Catalan tissue donation network and the first contributor in musculoskeletal tissues in 2018.

THERE are many factors that hinder a consistent system of donation in Catalonia. The difficulties of establishing mechanisms of screening among the hospitals of our health system or the aging population, among other reasons, force the need to look for new sources of donation.

In 2014, the Catalan Health Service (CatSalut) issued instruction 4/2015 [1], promoting the integration of new centers to the network of donation through collaboration with the Donor Center of Catalonia (DCC). The DCC is a strategic alliance between the Barcelona Tissue Bank (part

of the Blood and Tissue Bank of Catalonia) and the Hospital Clínic of Barcelona and aims to bring together the best from both institutions. It is the only tissue bank in the country and a referral hospital with resources and expertise in medical areas, such as microbiological testing.

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The creation of DCC facilitated the signing of an agreement between Blood and Tissue Bank of Catalonia, the Hospital Clínic de Barcelona, the Department of Justice of the Generalitat de Catalunya, and the emergency medical system (SEM) for the donation of tissues in the Institute of Legal Medicine and Forensic Sciences of Catalonia (IMLCFC), where the autopsies of all judicial deaths in the province of Barcelona are performed. In 2016, we began the procurement of corneas in the IMLCFC thanks to the networking of the institutions mentioned above.

MATERIALS

The Catalan Transplant Organization created the framework to develop this program and, as a representative of the Catalan Health Service, allowed access to possible donors' medical history through the shared medical record system that provides the information that different health care centers have published on the patient throughout the time. The SEM established a protocol to create a warning to report a discharge "exitus" in their system. The DCC made available the skilled nursing staff necessary to evaluate and change the status from possible to potential donor and perform the recovery of ocular tissue in the IMLCFC itself, where from that moment would have an assigned workspace. The IMLCFC provided access to DCC staff to their facilities and also bridged the gap between clinicians and forensics teams, creating a brand new and fruitful collaboration.

METHODS

The workflow involved part of the different partners of this project. The process began with the notice of CatSalut through its platforms informing of any death reported by the SEM anywhere in Catalonia so that the detection was prearrival to IMLCFC. Once there, the DCC staff performed a clinical evaluation and physical examination in each donor to determine the suitability requested by our Tissue Bank (eg, pathologies, cause of death, or body condition). If the potential donor was eligible [2], the legal next of kin was offered the opportunity to authorize the donation by DCC staff. This authorization was obtained by call recording.

In this context, the legal authorization was mandatory to proceed to tissue recovery. The files were sent to court so they could authorize the tissue procurement (next-of-kin authorization and the request for tissue recovery). If granted, a blood sample was taken, and tissues were obtained in agreement with the coroner responsible.

RESULTS

In 2016, 152 donors of corneas were obtained (9.7% of the annual procurement in Catalonia), 149 in 2017 (9.4% of the annual procurement), and in 2018, despite the Barcelona Tissue Bank decrease of the upper age limit from 89 to 85 years old and the new hospitals introduced in the donation network, 133 donations (8.6% of the annual procurement) were obtained. IMLCFC has become the third largest contributor in the system of donation of tissues in Catalunya. Regarding this result, a survey was conducted to identify potential multitissue donors, resulting in a decision to adapt an autopsy room at the IMLCFC as an operating room for

tissue retrieval to accept multitissue donors. At the end of 2017, the IMLCFC started multitissue retrieval, having obtained in 2018 a total of 76 donors and becoming the leading center in Catalonia.

IMLCFC performs approximately 1500 autopsies per year. The main reasons for potential donors not becoming real donors are as follows: time elapsed since the death; age limit fixed by the tissue establishment (currently, above 85 years old for eye tissue and above 80 years old for musculoskeletal tissue); causes related to judicial process, including coroner refusal or circumstances in which coroners or judges might consider that retrieval procedure could become an interference to establish the cause of death in an undergoing investigations in potential homicides, sudden death, or work accidents; medical causes, such as biological risk or clinical contraindications; and family or donor refusals.

DISCUSSION

This project has both advantages and drawbacks. Regarding the pros, the main benefit for citizens is the opportunity to make their willingness to become donors effective in an out-of-hospital context and, on the other hand, the volume of autopsies per year facilitates procurement of donors beyond the hospitals, increasing the number of available tissues to be treated and transplanted, especially those obtained from young donors [3,4].

The workflow with different professionals has been useful for everyday work but also to improve the criteria and the retrieval techniques, especially for the nursing staff, who act as members of the retrieval team. That allows directly performing the retrieval and also avoiding having to move a whole team when a multitissue retrieval is scheduled.

On the other hand, we have some cons, such as the time from death, the difficulties to find the medical records without references, no next-of-kin available, and the increasing number of family refusals. In Spain, all citizens are considered donors if in life they have not expressed otherwise [3]. However, this expression may have been formulated in different ways, forcing the location of next-of-kin to ask about the will of the deceased.

CONCLUSIONS

Out-of-hospital tissue donation in a forensic institute is possible, but the project has required collaboration and understanding between work teams belonging to different institutions, one linked to judicial work and the other related to health system, taking into account that the main objective is different in both cases. In this particular case, IMLCFC focuses on clarify the cause of death when it was sudden, unusual, or related to a crime and DCC take care of health providing grafts for transplant when needed.

The main challenge has been to involve the institutions to preserve their own rules and purposes while offering the best options that respect the wish of donation of the

potential donors dying under those circumstances and guaranteeing the tissue sufficiency for the patients of the Catalan health system.

The results encourage looking for new donation networks that allow us to decrease the waiting lists in our country.

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