G18 Increasing Heart Valve Donation by Utilization of a Cardiovascular Registry

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After attending this presentation, attendees will understand the benefits of utilizing established cardiovascular registries to increase the number of heart valve donations by medical examiners/coroners.

This presentation will impact the forensic community and/or humanity by providing the forensic community details of how an office in a large metropolitan area was able to allow a significant number of heart valve donations by requiring that the remnant myocardium be examined by a cardiovascular pathologist. There were no significant delays in time to sign the death certificate nor in determination of the cause of death by requiring this specialized review.

The Minnesota Regional Coroner's Office (MRCO) is the smallest of four offices covering the greater Minneapolis/St. Paul area, serving a population of 642,000 persons, the second smallest in the area. The other three offices have a combined jurisdictional population of 2,489,600. Two of these offices also have large numbers of referral cases from rural Minnesota.

MRCO made the decision to allow heart valve donations whenever possible and to require the tissue services organization to document cardiac findings and to send the remnant myocardium to the Jesse E. Edwards Cardiovascular Registry for examination by a cardiac pathologist.

This study examines the result of this change in practice. The number of heart valve donations was 15 in 2002 and 23 in 2003. The total number of heart valve donations from other offices combined was 11 in 2002 and 6 in 2003.

There was no significant increase in the average number of days until death certificate completion (14 vs. 21 days).

Heart valves were donated in 21 accidental death cases. The age range was 15 to 54 years. Significant cardiac findings included: atherosclerotic coronary artery disease (4), cardiomegaly (3), myocarditis (2), moderate myxomatous change of mitral and/or tricuspid valves (3), focal subendocardial fibrosis (1), and 80-90% stenosis of a large intramyocardial artery (1). Six of the hearts were normal.

Heart valves were donated in 10 suicidal death cases. The age range was 16 to 54 years. Significant cardiac findings included atherosclerotic coronary artery disease (4), cardiomegaly (2), probable arrhythmogenic right ventricular cardiomyopathy (1), biventricular hypertrophy (1), and focal subendocardial fibrosis (1). Two of the hearts were normal.

Heart valves were donated in seven natural death cases. The age range was 23 months to 58 years. Significant cardiac findings included atherosclerotic heart disease (2) and one case each of possible arrhythmogenic right ventricular cardiomyopathy, healing myocarditis, and myocardial small vessel disease. One heart was normal.

Four of the seven natural deaths were cardiac related and three were non-cardiac related. The structurally normal heart was found in a 23-month-old child with severe developmental delay and microcephaly. In one case, the cause of death was due to a pulmonary thromboembolus. In the third case, the only cardiac finding was medial hypertrophy of intramyocardial arteries. This particular case involved a witnessed arrest 30 minutes after ingestion of sildenafil citrate (Viagara). The cause of death in this case was certified as "sudden cardiac death."

The practice of utilizing cardiovascular pathologists at a cardiovascular registry for examination of post valve recovery hearts has lead to significant numbers of heart valve donations at the authors' institution. This process has not resulted in a delay in death certification and has not compromised the determination of the cause or manner of death. In fact, it has been beneficial in several areas. There are some inheritable cardiac conditions that are well known to cause sudden death. Recognition of these conditions is sometimes subtle, but the diagnosis may have enormous implications for family members. Examination of the remnant heart by cardiovascular pathologists who are accustomed to studying cases of sudden death and working with families also provides the pathologist with additional physician resources. Furthermore, as seen by review of these cases, many cases of non-natural deaths have a significant cardiac abnormality. These conditions may not have been evaluated completely without donation, if a complete autopsy had not been required. Some of these conditions also may have genetic implications for family members.

Tissue Donation, Cardiovascular Pathology, Cause of Death

 ** Presenting Author*