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Research Article

Effects on the Patient Pathway for Heart and Lung Transplantation During the COVID 19 Pandemic

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Abstract

To evaluate the impact of Coronavirus on the cardiopulmonary transplant program we compared mortality during the pandemic with each of the previous 5 years activity with reference to the stages of the patient pathway from referral, through assessment, waiting list and post transplantation. The deaths had been retrospectively reviewed throughout the entire cardiothoracic transplant pathway between 2015 and December 2019. The patients have been categorized into pre- and post-transplant cohorts. Pre-transplant patients were further subdivided depending upon their stage in the assessment process–referral, assessment, or active waiting list. Prospectively the deaths in the pathway have been analyzed during the Coronavirus pandemic from January 2020 to June 2021 and compared deaths at each stage in the pathway to determine the impact on this vulnerable group. Surprisingly the retrospective review did not suggest any rise in mortality in this vulnerable population due to COVID. Most patients, being aware of the risks and effects of COVID on their disease, may have exercised extreme caution, effectively isolated, and shielded from contacts and strictly followed a personal hygiene policy. This may well explain the effectiveness of these measures in protecting this population. There is evidence that vaccination may have limited efficacy in transplant recipients and so the effectiveness of shielding and hygiene can be shown to have a demonstrable protective impact on this vulnerable group.

Keywords: Heart transplantation; Covid 19; Pandemic; Lung transplantation.

Introduction

The 2020 coronavirus (COVID19) pandemic has had a profound effect infecting almost 10 million people and leading to almost 500,000 deaths [1]. Patients undergoing heart and/or lung transplantation are immunosuppressed following major surgery and would be expected to have a high risk of infection and death. Those on the active waiting list for

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cardiothoracic transplantation also represent a highly vulnerable cohort at great risk of death if infection is acquired given their end stage cardiovascular and respiratory disease [2].

To evaluate the impact of Coronavirus on the cardiopulmonary transplant program the mortality is compared during the pandemic with each of the previous 5 years activity with reference to the stages of the patient pathway from referral, through assessment, waiting list and post transplantation.

Methods

The deaths have been retrospectively reviewed throughout the entire cardiothoracic transplant pathway between 2015 and December 2020 using prospectively collected data on each patient from the institutional database.

The patients have been categorized into pre- and post-transplant cohorts. Pre-transplant patients were further subdivided depending upon their stage in the assessment process– referral, assessment, or active waiting list. Prospectively the deaths have been then analyzed in the pathway during the Coronavirus pandemic from January 2020 to June 2021 and compared deaths at each stage in the pathway to determine the impact on this vulnerable group. Oropharyngeal or broncho-alveolar lavage swabs positive for COVID were considered as demonstrating an active COVID infection.

	Heart 2016	**2017**	**2018**	**2019**	**2020**
Adult	**24**	**13**	**21**	**12**	**15**
Referral	3	2	3	-	-
Referral-declined	-	-	-	-	-
Turned down	-	-	-	-	-
Assessment	6	1	3	1	2
Active list	8	4	5	3	4
Active list (removed)	-	-	1	2	1
Transplant	6	6	8	6	7
Transplant other centre	1	-	-	-	-
Re-transplant	-	-	1	-	-
Active list	-	-	-	-	-
Re transplant	-	-	-	-	1
Paediatric	**8**	**7**	**3**	**7**	**4**
Referral	1	-	-	-	-
Active list	2	2	-	1	1
Active list (removed)	1	1	-	1	-
Transplant	4	4	3	4	3
Transplant other centre	-	-	-	-	-
Retransplant	-	-	-	1	-
Grand Total	32	20	24	19	19

Table 1: Heart Transplant patients 2016-2020.

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	Lung 2016	2017	2018	2019	2020
Adult	**43**	**48**	**51**	**44**	**40**
Referral	13	12	11	5	5
Referral-declined	-	1	-	-	-
Turned down	1	2	-	-	-
Assessment	9	6	12	10	5
Active list	6	12	11	5	11
Active list (removed)	1	1	3	1	-
Transplant	13	14	13	23	19
Transplant other centre	-	-	1	-	-
Re-transplant	-	-	-	-	-
Active list	-	-	-	-	-
Re transplant	-	-	-	-	-
Paediatric	**2**	**1**	**-**	**2**	**1**
Referral	-	-	-	-	-
Active list	-	-	-	-	-
Active list (removed)	-	-	-	-	1
Transplant	1	1	-	1	-
Transplant other centre	1	-	-	-	-
Retransplant	-	-	-	1	-
Grand Total	45	49	51	46	41

Table 2: Lung transplant patients 2016-2020.

Results

Table 1 shows that 19 patients in the heart transplant pathway died during Jan 2020 to June 2020. 4 of the patients were in a paediatric age group. Out of the total deaths, 10 were post-transplant and 4 were on the active list. The number of deaths due to COVID was 1 from the post-transplant group and one in the pre transplant group. The total deaths during the same period were 19,24,20 and 32 in the years 2019,2018,2017,2016 respectively. The lung transplant pathway (Table 2) showed 41 deaths during the pandemic of which 11 were awaiting transplant and 19 were post-transplant. Of these deaths only one patient had a positive COVID swab.

Discussion

At the peak of the pandemic and prior to any vaccination program being instituted there appeared to be no exponential increase in deaths amongst the transplant population irrespective of the stage in the transplant process due to COVID. Surprisingly the retrospective review did not suggest any rise in mortality in this vulnerable population due to COVID.

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Most patients, being aware of the risks and effects of COVID on their disease, may have exercised extreme caution, effectively isolated and shielded from contacts and strictly followed a personal hygiene policy. This may well explain the effectiveness of these measures in protecting this population.

There is evidence that vaccination may have limited efficacy in transplant recipients [3,4] and so the effectiveness of shielding and hygiene can be shown to have a demonstrable protective impact on this vulnerable group [5].

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Conflict of interest

The authors declare no conflict of interest in preparing this article.

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