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R T Kamble, Arch Med 2018, Volume 10
DOI: 10.21767/1989-5216-C2-004

World Congress on
Novel Trends and Advances in Biotechnology, Cell & Stem Cell Research &
Joint Event On
15TH Annual Congress on Pediatrics
November 28-29, 2018 Barcelona, Spain

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## Orthotopic heart transplant facilitated autologous hematopoietic stem cell transplantation for light-chain amyloidosis

**Objective:** Dominant cardiac involvement by primary systemic amyloidosis (AL) precludes effective AL treatment and is associated with short survival. We evaluated long term outcomes of these patients receiving Orthotopic Heart Transplantation (OHT) and Autologous Hematopoietic Stem Cell Transplantation (ASCT).

**Methods:** Between January 2009 and July 2018, total of 14 patients who presented with severe cardiac dysfunction as their major manifestation of AL underwent OHT. Eight of these 14 patients received ASCT. All patients had end stage heart failure and developed cardiogenic shock requiring intra-aortic balloon pump support (median 20 days, range 10-165) as a bridge to OHT.

**Results:** The median age at AL presentation was 54 years (42-63) in 7 females and 7 males. At median follow-up of 55 months (1-104) from OHT, 10 (71 %) patients are alive. Two patients died of post-operative complications at 1 and 7 months post OHT; 2 patient died 36 and 104 months after OHT (23 and 91 months post ASCT) of AL progression. Eight patients received ASCT at median of 13 months (13-34) after OHT. Treatment for disseminated cryptococcus delayed ASCT in one patient (#8). One patient awaits ASCT in June 2018. In the remaining 3 patients ASCT was not feasible due; to low DLCO (n=2) and prior ASCT (n=1). All 8 patients with ASCT were on tacrolimus and prednisone at the time of stem cell mobilization and hematopoietic transplant; two patients were also receiving mycophenolate mofetil and valganciclovir. We collected 4.0, 5.7, 6.1, 6.2 and 9.6 x $10^6$ /kg CD-$34^+$ cells in 2 days after filgrastim administration (5 ug/kg, twice daily) and plerixafor (16 mg/kg based on day- 4 CD-$34^+$ counts) in 5 subjects. The fifth patient initially failed to mobilize but 4.3x106 /kg CD-$34^+$ cells were subsequently obtained after stopping mycophenolate mofetil for 4 weeks. The median creatinine clearance at the time of ASCT was 42 (30-53) ml/minute. All 8 patients received a renal adjusted dose of melphalan at 140 mg/$m^2$. Mycophenolate mofetil and valganciclovir were withheld during neutropenia until engraftment. No patients received post-transplant filgrastim. Median duration of hospitalization was 18 (15-20) days. Six patients achieved hematologic complete remission while 2 patients had a partial response following ASCT. Post ASCT reactivation of CMV was seen in 4 patients. Median survival from initial AL diagnosis is 44 (11-136) Months.

**Conclusion:** The strategy of OHT followed by ASCT is therefore feasible in select patients with dominant cardiac involvement and advanced heart failure.

## Biography

Kamble is Professor of Medicine in Hematology-Oncology, Cell and Gene Therapy, Baylor College of Medicine and Methodist Hospital, Houston, TX. He has served as Assistant Professor of Medicine and Associate director of Hematology-Oncology fellowship program at Oklahoma University Health Sciences Center (OUHSC). Dr. Kamble is primarily interested in hematologic malignancies including multiple myeloma and hematopoietic stem cell transplantation. He was conferred Union against cancer (ICRETT, Geneva) award in 1994 to study molecular aspect of chronic myelogenous leukemia and bone marrow transplant in Hammersmith hospital, London and Central Science and Industrial Research (CSIR) award in 1995 to study stem cell transplantation in Cornell University, New York. Dr. Kamble is board certified in Internal Medicine and Medical Oncology. He has published extensively in prestigious journals including, Blood, Biology of Bone marrow transplantation and Journal of Clinical Oncology and regularly reviews manuscripts for Blood, Biology of bone marrow transplantation and Bone marrow transplant. Dr. Kamble's clinical interests are in innovative reduced conditioning protocols, *in vivo* T-cell depletion and novel approaches to reduce and treat graft-versus-host disease.

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