

Treatment summary of Hon'ble Chief Minister Selvi. J Jayalalithaa

(Written in consensus with all treating physicians mentioned below)

DEPARTMENT OF CRITICAL CARE MEDICINE

General Information:

Date: 07-Dec-2016

UHID: AC01. 0002081866

Patient Identifier: CMHIP 152162

Name: Hon'ble Chief Minister Selvi. J Jayalalithaa

Age: 68Yrs

Sex: Female

Primary Consultant: Critical Care Consultants Group

Date of Admission: 22-Sep-2016

Date of Expiry: 05-Dec-2016

Diagnosis:

1. Enterococcus bacteraemia with septic shock and ARDS with secondary pulmonary infections requiring prolonged ventilator support
2. Infective endocarditis of calcified mitral valve with valve perforation, Mitral Regurgitation and first degree AV block
3. Heart Failure with preserved systolic function
4. Uncontrolled Type-2 Diabetes mellitus
5. Hypertension
6. Hypothyroidism
7. Asthmatic bronchitis and probable sleep apnoea
8. H/O Irritable Bowel Syndrome
9. Atopic dermatitis

Consultants involved in care:

1. Critical Care Consultants Group – Intensive Care
2. Dr. R. Narasimhan – Pulmonology
3. Dr. Y. Vijayachandra Reddy – Cardiology
4. Dr. I. Sathyamurthy - Cardiology
5. Dr. Rajeev Annigeri – Nephrology
6. Dr. Ramgopalakrishnan and Dr. Ramsubramanian – Infectious Disease
7. Dr. Sumana Manohar – Gynaecology
8. Dr. Jayashree Gopal – Endocrinologist
9. Dr. M.R.Girinath/ Dr. L.F. Sridhar – Cardiothoracic Surgery
10. Dr. Paul Ramesh/ Dr. Sunder/ Dr. Madan Kumar – Cardiothoracic/ECMO team
11. Dr. Babu Manohar – ENT
12. Dr. Prabhu – Hematology
13. Dr. Arulselvan – Neurology
14. Dr. K. Baskar – Anesthesiology
15. Dr. Ravikumar – Interventional Radiology
16. Dr. Parthasarathy – Ophthalmology
17. Dr. J.R. Subramaniam – Internal Medicine
18. Dr. Mathew Samuel (Senior Interventional Cardiologist, Apollo Hospitals)

External Expert Opinions:

1. AIIMS Team:

- a. Dr. G.C. Khilnani (Pulmonary and Critical Care Medicine)
- b. Dr. Anjan Trikha (Anesthesia and Critical Care Medicine)
- c. Dr. Nitish Naik (Cardiology)
- d. Dr. Nikhil Tandon (Endocrinology)
- e. Dr. Devagourou (Cardiothoracic Surgery)
- f. Dr. Rajiv Narang (Cardiology)

2. Dr. Richard Beale (Professor of Intensive Care Medicine and Consultant, Guy's Hospital and St. Thomas' Hospital, UK)
3. Dr. Suneetha Nareddy (Consultant, Infectious Disease, Apollo Hospitals, Hyderabad)
4. Dr. Chandrasekhar (Professor, Infectious Diseases, Wayne State University, Detroit, USA)
5. Dr. Jigi Divatia (Head of Department, Anaesthesia and Intensive Care Medicine, Tata Memorial Hospital, Mumbai)
6. Dr. O.C. Abraham (Professor, Infectious Diseases, CMC Vellore)
7. Dr. Rajeev Soman (Consultant, Infectious Diseases, P D Hinduja Hospital, Mumbai)
8. Dr. Ravi Mehta (Senior Consultant, Pulmonary and Critical Care Medicine, Apollo Hospital, Bangalore)
9. Dr. Stuart Russell (Cardiologist, Johns Hopkins Hospital, USA)
10. Dr. Jayan Parameswar (Medical Head of Heart Failure and Heart Transplantation, Papworth, UK)
11. Dr. Samin Sharma (Professor, Cardiology, Mount Sinai Hospital)
12. Dr. K.M. Cherian (Senior Cardiothoracic Surgeon, Frontier Life line and K.M. Cherian Heart Foundation)
13. Dr. Venkata S. Ram (Director, Texas Blood Pressure Institute &, Clinical Professor of Medicine, University of Texas Southwestern Medical School)

On 22.09.2016 around 10.00pm our ambulance service was called to our Hon. CM's residence urgently. On reaching there the team reportedly noted that she was not consistently responding to calls and was also breathless with low oxygen saturations (approximately 48%). Initial Pulse rate: 88/min and BP: 140/70. She was given oxygen supplementation through face mask with which oxygen saturation improved to 98% and then was immediately shifted to Apollo Hospital Emergency Room (ER), where she reached around 10.25pm.

On arrival to ER, Honourable Chief Minister Ms. Jayalithaa, 68 yrs old/F was noted to have altered sensorium (drowsy and not consistently responding to verbal commands) and in respiratory distress. Her oxygen saturation was 94% with a non rebreathing mask. There was sinus tachycardia with a BP of 140 / 100 mm Hg. Her peripheries were warm with bounding pulses and oedematous. Systemic examination revealed bilateral basal crackles in the lungs, soft heart sounds and clinically normal abdominal examination. ECG was suggestive of sinus tachycardia with prolonged PR interval. Screening 2D echocardiogram (Echo) revealed normal LV & RV functions with no evidence of pericardial effusion. Lung Ultrasonogram (USG) revealed extensive bilateral B profile indicative of pulmonary oedema. She was transitioned to non invasive ventilation (NIV – IPAP 12.5/EPAP 5) with supplemental oxygen. Her admission capillary blood glucose was 560 mg /dl. She was admitted in a very critical condition to Multidisciplinary Critical Care Unit (MDCCU) after initial treatment in ER which included: 1) Non invasive Ventilation (NIV), 2) Diuretic (Inj. Furosemide) 3) Empiric Antibiotics (Cefoperazone + Sulbactam and Azithromycin), 4) Bronchodilators (Nebulizers) and 5) Intravenous Insulin Infusion (Human Actrapid).

In the MDCCU further work-up was initiated and respiratory support with NIV continued. During her initial few hours in the MDCCU her PR interval was noticed to be gradually prolonging with intermittent episodes of Second degree AV block (Wenckebach pattern) and severe bradycardia and hypotension noted. She was treated for this peri- cardiac arrest situation as per ACLS protocol with Inj. Atropine and subsequently a temporary transvenous pacemaker was emergently inserted by Cardiologist. Dopamine at 5-10mcg/kg/min was also initiated for symptomatic bradycardia. She was also started on Noradrenaline infusion due to worsening hypotension which was titrated per protocol to maintain mean arterial pressure (MAP) > 65 mmHg. Serial ECGs and cardiac enzymes were not suggestive of an acute coronary event. Initial labs revealed a leukocytosis with a white count of 17,690 and a serum creatinine of 1.0mg/dl. Chest x-ray done at admission revealed bilateral infiltrates in the middle and lower lung fields. NT Pro- BNP level was raised at 5730. On further history, it was noted that patient had a recent outpatient urine culture that grew E.Coli with < 10⁵ Colony Forming Units (CFU) and hence antibiotic broadened to Meropenem. Doxycycline and Fluconazole also added to the existing regime to cover for tropical and fungal infections. Her prior medications (including beta blockers and other anti-hypertensives) were modified. Foley catheter was inserted for close monitoring of urine output. Additional measures including DVT prophylaxis, nutrition support, electrolyte corrections and skin care were initiated. NIV was optimised and titrated to medical requirements and comfort. The pacemaker was set at a standby rate of 70 / min, however subsequently she was noted to have intrinsic sinus rhythm and did not trigger pacing. Although her dyspnoea did not change significantly on the second day, her tachypnea and oxygen requirement improved and her sensorium returned to baseline (GCS 15). She interacted with family members and government officials.

Past medical history was significant for multiple medical problems including obesity, hypertension, poorly controlled diabetes, hypothyroidism, irritable bowel syndrome (IBS) with chronic diarrhoea and chronic seasonal bronchitis. She was also on a tapering dose of oral steroids initiated for atopic dermatitis by her dermatologist. There was history of intermittent fever for 5-7days with increased frequency of bowel movement.

A panel of experts including Intensive care team, Cardiologists, Pulmonologist, Infectious disease specialists, Endocrinologist, Cardio thoracic surgeons and Gynaecologist was formed and multidisciplinary discussions held regularly and consensus treatment plans devised and executed. A panel of physicians updated the patient's family, core group of government

officials and government designated medical team periodically throughout the hospital stay and they concurred with the treatment plan.

Initial set of blood cultures (4 sets) was suggestive of growth of Enterococcus sp. and hence intravenous Teicoplanin was started. Management was continued along lines of gut origin Enterococcal bacteraemia with moderate Acute Respiratory Distress Syndrome (ARDS). Repeated Transthoracic Echocardiograms were performed to evaluate for possible infective endocarditis. A trans-oesophageal echocardiogram (TOE) was not possible initially due to the patient's tenuous respiratory status. While her initial Transthoracic Echocardiograph (TTE) was only suggestive of calcific mitral valves, subsequent echoes done on Day 3 of hospital stay showed suspicious vegetations on the anterior mitral leaflet with mild-moderate mitral regurgitation. By this time the Enterococcus Fecalis was identified to be pan sensitive. Teicoplanin was de-escalated to Ampicillin and Ceftriaxone in appropriate doses. Expert ID opinion was obtained from Dr. Suneetha Nareddy (Consultant, Infectious Disease, Apollo Hospitals, Hyderabad) who agreed with the line of management. Work-up for tropical infections and vasculitis were reported negative. Hence it was decided to continue Meropenem and stop Doxycycline. Urine cultures were also sterile. NIV and other supportive measures were continued. Her requirements for pressure support (PS) and oxygen on the non-invasive ventilator had reduced, however these worsened even with minimal exertion. Her requirement for Noradrenaline continued and she was initiated on stress dose IV hydrocortisone in view of a recent history of exogenous steroid intake for atopic dermatitis. A non-contrast CT of chest and abdomen was done on 25/09/16 (Contrast avoided due to high risk for contrast nephropathy and allergic reactions – considering history of atopic dermatitis) to evaluate for source of sepsis and it did not reveal any significant intra-abdominal source. An incidental finding of 8 X 8 mm hypodense left adrenal nodule was reported. CT chest revealed patchy areas of consolidation with adjacent ground glass opacities in both upper lobes and patchy areas of consolidation in the right middle lobe and both lower lobes. Bilateral pleural effusions with sub-segmental passive collapse in both lower lobes was also noted.

Her clinical course deteriorated later during the ICU stay (Day 4 of hospital stay) when she started to develop significant audible wheeze and increasing tachypnea. Hydrocortisone was converted to Methylprednisolone (40 mg IV Q 6 H) and nebulizer frequencies increased to treat bronchospasm. Repeated TTE was suggestive of slightly increasing MR and left atrial dimensions, but no valve abscesses, conduction delays or other sequelae of infective endocarditis needing surgical intervention. Cardiothoracic surgical input was obtained and no acute surgical intervention was deemed necessary. She was managed with diuresis titrated to clinical symptoms, NT pro BNP levels and renal functions, afterload reduction with NIV and other conservative measures including optimization of medications. Leukocytosis and procalcitonin levels steadily decreased and hemodynamics improved. Noradrenaline and dopamine were gradually tapered off. Due to persistent fever, Fluconazole initiated was escalated to intravenous Anidulafungin considering high risk for invasive candidemia and repeat blood cultures sent every 48 hours. Next set of blood cultures remained negative for any growth. With above management on 27/09/16 patient was able to tolerate periods without NIV and was able to interact with government officials from the bedside.

After transient improvement in lung mechanics and oxygenation (patient tolerated off NIV for 30 minute periods 3-4 times and room air saturations were consistently >90%), she developed an acute episode of severe wheezing and breathlessness with worsening hypoxemia and work of breathing on 28th September. A consensus decision was made to intubate the patient and after obtaining informed consent from the family and core government officials, patient was successfully intubated using Fentanyl, Midazolam and Succinylcholine in the first attempt. Following intubation patient was sedated with Fentanyl and Midazolam infusions and paralysed with Vecuronium infusion and ARDSnet protocol ventilation initiated.

A TOE was performed immediately after intubation and repeated immediately after hemodynamic stability achieved. Dr. Chandrasekhar (Cardiologist, Apollo Ayanambakkam and Mayo Clinic, USA) was also part of the TOE evaluation team. This showed dense mitral annular calcification extending to the Atrioventricular (AV) crux, small perforation on anterior mitral leaflet tethering the commissure with grade 2/4 mitral regurgitation (MR) from a narrow jet, splaying into the left atrial appendage. MR orifice area was 0.1 cm², vena contracta was 3mm. MR fraction was 14-16%. All these criteria were suggestive of non-hemodynamically significant MR. There was no evidence of mitral valve annular abscess or AV ring abscess. There was no pulmonary vein flow reversal. Two vegetations were seen: 1) Calcified 12-14 mm vegetation around the small perforation and 2) another shorter vegetation (7mm). There was no central MR or any other jet of MR (Patient's Transthoracic echocardiograph done at her residence 1 year before this hospitalization by the same echocardiographer in the setting of poor echo window showed Left ventricular diastolic dysfunction and mild MR). The Left main coronary artery, ostioproximal LAD and Left circumflex and ostioproximal RCA were clear and of normal calibre. A panel of cardiologists and cardiothoracic surgeons including Dr. M.R. Girinath, Dr. K.M. Cherian and Dr. L.F. Sridhar reviewed the patient and the TOE findings and recommended continuation of medical therapy as there was no indication for emergency surgery.

Post intubation CXR revealed worsening bilateral pulmonary infiltrates suggestive of pulmonary oedema and consolidation. New onset of leukocytosis was seen with some change in sputum quality and colour. The possibility of a new onset sepsis was considered – possible sources being lung and the catheters and hence cultures were repeated and central line changed. Additional empiric antibiotics including coverage for Gram positive and multi-drug resistant (MDR) Gram negative bacteria were initiated. Dr. Chandrasekhar, (Professor, Infectious Disease Department, Wayne State University, Detroit, USA) was consulted over the phone and detailed discussion held about the patient and inputs sought regarding antibiotic therapy which were appropriately modified. An expert panel of Intensivist (Dr. Jigi Divatia, Mumbai) and Infectious disease specialists (Dr. O.C. Abraham from CMC Vellore, Dr. Rajeev Soman from Mumbai) were invited to independently evaluate and provide input and they concurred with the line of management. However since all cultures were negative including previous Central line tip, antibiotics were de-escalated. An USG guided thoracocentesis of right pleural effusion was done for both diagnostic and therapeutic reasons. This was later confirmed to be of transudative nature. She also had nonspecific jerky movements on the left shoulder. Neurologist (Dr. Arulselvam) consulted and EEG done which revealed mild diffuse cerebral dysfunction with no ictal activity. Levipill 500mg BD started through the nasogastric tube.

The CXR infiltrates and respiratory decompensation was thought to be multifactorial including ARDS, bronchitis component with bronchospasm, diastolic heart failure and possible neuromuscular weakness and overall poor respiratory system compliance considering her baseline mild kyphoscoliosis, obesity, and pulmonary oedema. Wheezing improved and parenteral methylprednisolone was discontinued after a short 5 day course. Ampicillin and Ceftriaxone and ARDS ret ventilation were continued and paralytics stopped and sedation gradually tapered. Diuresis and vasopressors were continued to achieve a daily negative fluid balance. A trial of Dobutamine to optimize cardiac function attempted. Nutrition and other supportive measures were continued. On 30th of September 2016 she had worsening of respiratory dynamics requiring escalation of sedation, oxygen supplementation and PEEP. CXR again revealed worsening pulmonary edema and BNP levels increased again. Dr. Richard Beale, Intensivist from UK was invited to provide an expert opinion. He after extensive discussion and evaluation of patient suggested Levosimendan infusion as a trial to address the diastolic dysfunction and hence it was initiated. He also counselled the family and the government officials about the nature of the problems, need for prolonged ICU and hospital stay & guarded prognosis. He was of the opinion that considering her overall condition she carries a mortality of 40%. Repeat imaging revealed a rapidly re-accumulating pleural effusion bilaterally with collapsed lung units and increasing consolidation. Pigtail catheters were inserted percutaneously by interventional radiology bilaterally under aseptic precautions and fluid drained multiple times with improvement in respiratory compliance. The fluid was always transudative in nature on repeated testing.

Over the following two days, there was a gradual resolution in CXR infiltrates and pleural effusion translating into better lung function. Her hemodynamic parameters remained satisfactory. There were a few episodes of intermittent low grade fever however with no evidence of any new onset infections. WBC Count and procalcitonin levels were followed every day and showed an improving trend. DVT was ruled out as a cause of low grade fever with a Doppler screening for both upper and lower extremity deep veins. USG of the abdomen revealed a slightly distended gall bladder with sludge. Patient's repeat blood and urine cultures were all negative. Dr. Ravi Mehta, Senior Consultant, Pulmonary and Critical Care Medicine, was invited for an expert opinion and his inputs sought and management plans discussed. Peripherally inserted central catheter (PICC) line placed on 2/10/16 for long-term need of IV access and all central catheters were removed. Arterial line and foley catheter left in place for close monitoring.

Ventilator weaning was attempted with pressure support ventilation (PSV) and after initial tolerance of PSV, she developed an acute increase in BP followed by pulmonary oedema and hypoxia. She was subsequently switched over to V-CMV mode and kept sedated overnight. Furosemide diuresis and Nor adrenaline were re-started and titrated to clinical response. A PA catheter was placed on 5th October 2016 to assess her filling pressures and for guiding further treatment. Initial PA pressures were 55/25mmHg with a wedge pressure of 20 mmHg. Milrinone infusion was started to improve diastolic function of the heart but had to be stopped after five hours on account of hypotension. It was re-started the following day together with noradrenaline and diuresis guided by clinical and pulmonary capillary wedge pressure (PCWP) response to address pulmonary oedema. An expert team appointed by Government of India from All India Institute of Medical Sciences (Dr. G. C. Khilnani, Dr. Arjan Trikha, Dr. Nitish Naik) visited and had lengthy discussions with our team and concurred with the plan of management and updated the family members and senior government officials. Bilateral pigtail catheters were removed after a 3-5 day period and pleural fluid drained dry.

The expert team of doctors from AIIMS and Dr. Richard Beale subsequently visited the patient several times during the ICU stay and provided input on the care and concurred with the overall management strategy and counselled both the family members and government officials.

Patient was noted to have acute sudden recurrent episodes of high sympathetic drive with increase in heart-rate, systemic and pulmonary pressures and high filling pressures associated with hypoxemia. On further history it was apparent that she has had similar episodes when she either feels warm or cold even at home – attributed to swings in sympathetic tone from likely diabetic autonomic neuropathy. The consensus was hence to optimize BP, minimize tachycardia, create a negative fluid balance and address diastolic dysfunction. Hence patient was started on Spironolactone, Ivabradine, IV lasix infusion and BP supported with small dose of noradrenaline and a negative fluid balance targeted. EEG done revealed basic alpha background intermingled with intermittent scanty theta and delta waves. Renal artery Doppler done twice and significant renal artery stenosis was ruled out. Considering the recurrent episodes of pulmonary edema, underlying co-morbidities, likely need for long term ventilator support and ease of further care, consensus decision was made to perform an elective tracheostomy. Family and senior government officials were counselled and consent obtained and tracheostomy performed on October 7th 2016 by Dr. Babu Manohar (ENT) in the operating room uneventfully.

Over the period of stay in the ICU, patient's haemoglobin gradually dropped from 10g/dl on admission to 6.8g/dl. Stool hemeoccult done was negative. No other obvious sources of bleeding were noted. Hematologist (Dr. Prabhu) was consulted and this drop in haemoglobin was thought to be related to critical illness. Reticulocyte count was 9% and LDH around 450. Peripheral smear did not show any schistocytes. Coombs test sent to rule out hemolysis came back negative. PRBC transfusions were done for Hb < 7g/dl throughout the hospital stay.

Due to persistent low grade fever and requirement of low-dose of noradrenaline in the absence of significant new positive cultures, a random serum cortisol was sent again (previous levels were 39 and 18). Serum cortisol was reported as relatively low (12 mcg/dl) and hence hydrocortisone 50mg bolus followed by 200mg infusion/day was initiated. Trials of ventilator assisted respirations were attempted with variable response. Periods of hypertension, tachycardia and pulmonary edema occurred during which times she was placed on full assist ventilation on volume targeted ventilation.

A chest x-ray done on the morning of 08/10/16 showed worsening of right lower and mid zone opacity suggestive of pleural effusion with possible basal atelectasis. Ultrasound chest done confirmed presence of an effusion and 450 ml of straw coloured fluid was aspirated from the right pleural cavity. Analysis of the fluid returned as a transudate again. Pleural fluid was negative for malignant cells. Her noradrenaline infusion was successfully weaned off and she tolerated high PSV (PS 20) with a PEEP of 10. She was continued on Lasix infusion for diuresis and fluid removal.

Over the course of the day on 09/10/16 her urine output continued to drop and she became anuric. Evaluation of the renal parameters showed a near normal urea (61) and creatinine (0.7) with normal serial urinary NGAL and low FENa and FEUrea. She was initiated on infusion of isotonic albumin for replenishing her intravascular volume and also given a unit of PRBC as her haemoglobin had dropped to 7.7 gm/dl. She responded to a Lasix challenge of 80mg and maintained a satisfactory hourly urine output after a 6 hour trial of Dopamine infusion. Repeat chest x-ray showed worsening of the right sided opacity and appearance of new infiltrates on the left mid zone too. Ultrasound chest showed re-accumulation of pleural effusion on both sides. Hence pigtail catheters were placed again on both the pleural spaces and the fluid aspirated dry every 12 hours. Her urine culture (significant growth) and ET culture (insignificant growth) grew *Burkholderia cepacia*. In view of her hypothermia and hypoxia, a clinical decision was taken to treat her as having urosepsis and she was started on Meropenem 1gm IV tid, based on the sensitivity report. She was also given a dose of empirical Caspofungin 70 mg, pending her new blood cultures. She was ventilated on VCV and no weaning was attempted that day. She was kept sedated on an infusion of Fentanyl to maintain a RASS score of -2 to -3. She was also started on Fentanyl patch (25 micrograms).

Since her hemodynamics remained intact, low dose beta blocker was initiated (metoprolol 12.5 mg BID) on 10/10/2016 to blunt the periodic high sympathetic responses and to improve the diastolic dysfunction. Repeat renal parameters showed elevation in urea (101) with creatinine remaining normal (0.83). The urinary Ngal remained normal. Gentle volume replacement with isotonic albumin was continued and the urine output continued to be around 30-40 ml/hr. Her blood cultures did not show any growth and the Caspofungin was discontinued. *C.difficile* sent for diarrhea was negative.

On attempting ventilator weaning with pressure support (PS), it was noted that patient had both de-recruitment and dys-synchrony which were further worsened by the tachycardia/hypertension response she developed, periodically needing sedation. To optimize lung mean airway pressures and dys-synchrony, patient was initiated on BiLevel ventilation with Phigh of 26, Plow of 12; Thigh: Tlow = 1:1 and 60% FiO2. Patient tolerated these settings and sedation was weaned off gradually except fentanyl patch of 25 mcg. Her settings were gradually weaned down to Phigh of 20 and Plow 12 and 45% FiO2. Metoprolol was gradually increased to 25 mg three times a day and Aldactone re-initiated. Patient was awake, alert, comfortable and interacting appropriately taking sips of liquids.

A significant issue during this time of ICU stay was alteration of sleep wake cycle with patient not sleeping through the night despite optimization of sedative agents. Fluid balance had to be maintained within fine limits since significant negative a balance resulted in worsening azotemia and a slight positive balance caused worsening lung compliance and desaturation. In addition, the volume of pleural effusion increased acutely to almost 1 L on each side the reason for which thought to be multifactorial. Repeat testing of pleural fluid revealed a transudative effusion. Pleural fluid sent for cultures and cytology.

MTB Gene xpert on the pleural fluid was negative. The rate of pleural fluid re-accumulation was too fast to be explained by congestive heart failure alone and hence Plain CT chest planned. On 14/10/16 – CT Chest/ abdomen and pelvis plain was done. CT Chest revealed – diffuse areas of air space consolidation, alveolar infiltrates and interstitial edema involving both the lung fields. Ground glass opacities in both lung fields with interlobular septal thickening in both lower lobes and right middle lobe. CT abdomen & pelvis revealed minimal free fluid in the pelvis. Patient's family requested us to obtain the expert opinion of an external cardiologist during the hospital stay. At various time points Dr. Stuart Russell (Cardiologist, Johns Hopkins Hospital, USA) and Dr. Jayan Parameswar (Medical Head of Heart failure and Heart Transplantation, Papworth, UK) were consulted over the phone and telemedicine and inputs obtained. Both of them attributed the recurrent episodes of breathless and transudative pleural effusion to a combination of diastolic heart failure and capillary leak syndrome and advised continued diuresis. Dr. Mathew Samuel, a senior Interventional Cardiologist from Apollo Hospitals, also evaluated the patient's clinical condition and concurred with the optimization of medical management and op ned that there was no need for an urgent coronary angiogram or intervention.

APRV ventilation was continued and PHigh gradually reduced from 26 to 14 and PEEP decreased from 1C to 8 and FiO2 40% continued. APRV was gradually transitioned to Bilevel ventilation with prolongation of Expiratory time and subsequently patient was placed on CPAP 8 and PS 12. Optimization of cardiac medicines with gradually increasing doses of metoprolol, spironolactone and furosemide on an as needed basis to achieve a negative balance were continued. Lisinopril, Nikorandil and Ranolazine were added for cardiac optimization and Lisinopril was subsequently changed to Losartan in view of cough. Repeated transthoracic echocardiograms done did not show any new worsening of mitral valve vegetations, wall motion abnormalities or drop in EF. Sleep wake cycle was managed with optimization of enteral sedatives at night and as needed parenteral sedation. Active and passive physiotherapy started and oral feeds started and nasogastric feeds changed to 14 hours/day from 6 pm to 8 am. Patient continued to interact and was able to communicate her needs to the nursing and the medical team.

Gradually over the next few days, PS was weaned and oral feed encouraged while still maintaining enteral nutrition support. Overall plan for management included a) optimal sedation in the night with oral medications (melatonin added to the regime) and as needed parenteral sedatives to ensure adequate sleep, b) cardiac optimization with betablocker, aspirin, nitroglycerin patch, Spironolactone, Losartan, Nikorandil and Ranolazine. Heart rate was maintained around 70-90/min and SBP < 160mmHg maintained to prevent any precipitation of diastolic failure. Parenteral Furosemide used to maintain a negative balance of 500-1000ml/day and urea/ creatinine and electrolytes were monitored and managed closely. Patient commonly had premature ventricular contractions and electrolytes were closely monitored and corrected appropriately. Lung mechanics and gas-exchange monitored and PS wean done gradually. Back and perineal care provided every day. During this time, patient removed the nasogastric tube and did not want it re-inserted. Hence considering that patient was able to take oral feeds, oral nutrition support was added and patient encouraged to take as much PO protein/ calories as possible and her oral intake was closely monitored. On 1/11/16, since patient's PO protein intake was consistently inadequate at only 25-30 grams/day, and hence IV Aminoacid infusion was initiated to supplement proteins and a total protein goal of 60 -70 grams targeted. Inj. Dalteparin was changed to PO Apixaban and DVT prophylaxis with Apixaban 2.5 mg PO BID continued. Glycemic control was achieved with IV insulin infusion that was guided by periodic bedside blood glucose measurements. Ampicillin and Ceftriaxone were stopped after a total duration of 6 weeks. Physiotherapists from Singapore were invited and they provided both passive and active physiotherapy to the patient along with our team of physiotherapists and nurses. Patient was encouraged to engage in physical therapy and was made to sit on the edge of the bed and on a wheel chair. On 2/11/16 Patient was placed on T-piece and tolerated it well for 30 minutes and over time the time of T-piece gradually increased. On 3/11/16 – patient had slightly cold right foot and hence arterial and venous dopplers of both lower extremities done. Diffuse wall calcification of arteries of lower

extremities was seen with no focal narrowing or occlusion. Good flow seen in all arteries. There was no evidence of DVT. On 5/11/16 – arterial line changed to the right radial artery and the old line removed.

With all the above supportive measures, patient was transitioned to day time T-piece and nocturnal ventilation with PS 5-7 and PEEP 5. Her oxygen requirements on T-piece gradually decreased to 2L. On 13/11/16 both the arterial line and foley catheter removed to minimize infection risk and only PICC line left in place for IV access. Tracheostomy cuff was left deflated during T-piece trials and oral diet pursued. Once cuff deflation was tolerated consistently, tracheostomy tube was down sized to No. 6 Shiley fenestrated tube to facilitate speech on 14/11/16, uneventfully. Patient was able to speak with the aid of speaking valve and cuff deflation for short periods of time. She was tolerating T-piece trials and spontaneous breathing for almost 16 hours a day and was being placed on ventilator (with pressure support) only in the night usually from 11pm to 5pm with tracheostomy tube cuff being deflated almost all the time and tolerated it well. On 19/11/16 in view of overall improvement in patient status and rehabilitation and supportive care being the mainstay of management, patient was moved out of the ICU to a specially designed high-dependency bed in a wheel chair, with 24 hours nursing and medical supervision. Despite a Size 6.0 Shiley tube, patient was unable to tolerate prolonged trials of speaking valve and since her ventilator requirements were very minimal, plan was to downsize the tracheostomy to size 4.0 Shiley cuffed fenestrated tube and was done on 25/11/16. Patient was treated with one week course of Intravenous Ceftazidime for respiratory secretion culture positive for Pseudomonas species.

Dr. Venkata S. Ram, a hypertension expert from Apollo Institute of Blood Pressure Management, Hyderabad, was consulted over the phone to discuss the episodic hypertension and he suggested work up for Neuroendocrine tumour once patient's acute care issues improved. In view of her episodic hypertension – plasma-free Metanephrine levels were checked twice. The first time it was just above the normal limit 70 (upper limit 65). However the second time it was checked, it was within normal limits. 24 hour urine 5 – Hydroxyl Indole Acetic Acid (5-HIAA) level done during the hospital stay was also within normal limits. Chromogranin A levels were elevated, but thought to be likely false positive related to the anti-acidity medications. An independent endocrinology expert opinion from AIIMS (Dr. Nikhi Tandon) was obtained, who also examined her and reviewed all the data in detail and felt that a neuroendocrine tumour was highly unlikely. Hence the consensus was that further work-up for a neuroendocrine tumour was not deemed immediately necessary and could be planned later. This plan was conveyed to the patient's family and core government officials by the expert team of doctors from AIIMS along with our medical team.

Dr. Samin Sharma, Cardiologist was invited by family for an expert opinion and after evaluating the records and the patient, discussed with the medical team and provided input. During the hospital stay including at presentation as well as during episodes of worsening breathlessness there was no symptomatic, electrocardiographic (ECG monitor, 12 lead ECG) or echocardiographic (no Regional wall motion abnormalities, no increase in LV diastolic dysfunction, no new LV systolic dysfunction, no increasing MR) evidence of ischemia. On 29/11/16 Holter monitoring was done which revealed frequent ventricular premature contractions, but no evidence of significant arrhythmia or ST-T changes suggestive of ischemia. In view of patient's elevated urea level and pulmonary status (recent VAP and ARDS), the consensus decision was that further coronary evaluation could be planned electively at a later date.

On 3/12/16 her serum potassium was 5.5 meq/dl and hence Spironolactone and Olmesartan were stopped and Amlodipine 2.5mg PO BID started for hypertension. Subsequent potassium levels showed a decreasing trend and reached normal limits by the morning of 4/12/16. Nerve conduction study was done which revealed sensorimotor autonomic polyneuropathy involving the lower limbs more than the upper limbs. On 3/12/16 – Team of AIIMS doctor including a cardiologist and endocrinologist headed by Dr. Khilnani visited Apollo and reviewed all the data, met with patient and her family.

They interacted with the patient and encouraged her to increase her oral intake and participate more actively during the physiotherapy sessions. They also agreed that coronary angiogram was not needed emergently and opined that it could be planned at a later date and conveyed this to the family and the government officials.

However on the same day her cough and tracheal secretions started to increase. Her oxygen requirement increased from 2L to 4L/min. A CXR obtained showed a possible evolving left lower lobe infiltrate. In view of the worsening symptoms and oxygen requirement culture of blood and tracheal secretions was sent. Gram stain of tracheal secretions revealed gram positive cocci and hence after discussing the Infectious diseases consultants, IV Linezolid was started with a possible working diagnosis of new onset pneumonia and was placed on ventilator over night for extended hours.

On 4/12/16 morning she was placed back on tracheostomy mask and required 3-5L/min of oxygen to achieve saturations of 98-100%. She had an episode of vomiting after her breakfast. At about 4.20 pm while watching television in the presence of nurses, duty doctor and family members in the room, she complained of worsening breathlessness. Examination revealed that she was tachypneic and had bilateral extensive wheezing. She was placed on the ventilator immediately and bronchodilator nebulisation (Levolin, Ipravent and Budecort) started and IV Lasix given. The ventilator settings were quickly increased to give maximal support for respiratory distress. During this treatment, patient had an episode of self-limited nonsustained ventricular tachycardia at which point Magnesium sulfate 2 g IV stat ordered. Patient had another episode of run of PVCs that quickly degenerated to ventricular fibrillation. Hence CPR started as per ACLS protocol, defibrillation done with biphasic defibrillator at 200 J x 3, IV Amiodarone bolus given and venous blood gas (VBG) sent. VBG revealed serum potassium of 6.2meq/dl and hence calcium gluconate, insulin/dextrose and bicarbonate bolus given. Quality of CPR was monitored continuously with EtCO₂ which was maintained consistently above 20. Patient went into asystole and then to PEA after the third cycle of CPR. ECHO done during the cardiac arrest revealed no pericardial effusion, marginally dilated RV and no appreciable intracardiac valve leakage. Return of Spontaneous Circulation (ROSC) could not be obtained despite 30 minutes of CPR and hence ECMO team called to the bedside for initiation of ECPR and VA ECMO initiated by central cannulation through sternotomy at around 5.30pm. Epicardial pacers put in and heart paced and ECMO flows of 3-3.5 L achieved. On ECMO patient had another episode of ventricular tachycardia/ventricular fibrillation and shock delivered using internal defibrillator. Fluid boluses given and multiple blood products transfused. Patient had a lot of oozing from the open chest and cannulation sites and hence was transfused several units of screened and compatible PRBCs, FFP, Cryoprecipitate and platelets. One dose Tranexamic 1g IV given to minimize bleeding. Chest was packed with gauze and adrenaline infusion titrated for MAP > 60mmHg. At 10.30 pm on exam patient had spontaneous purposeless blinking and pupils were 5 mm bilaterally and sluggishly reacting. Continuous renal replacement therapy was done through the ECMO circuit. Patient slowly had intrinsic electrical activity but no significant ventricular ejection. At around midnight patient taken to the operating room (OR) for achieving adequate hemostasis. In the OR right femoral vein was cannulated which provided good venous return to the ECMO machine. Hence right atrial appendage cannula was removed. Hemostasis secured with packing and chest was closed in layers following which patient was transferred to the ICU. Hydrocortisone 300mg over 24 hours as an infusion started and Meropenem/Vancomycin given. Hemoglobin 10g/dl; Fibrinogen 100mg/dl; INR < 1.5 and platelet count > 50000 targeted with screened and compatible multiple blood product transfusions. IV heparin started for ECMO and ACT maintained 150-180 after hemostasis achieved.

Immunomodulation with Cytosorb hemadsorption started as a desperate salvage therapy. Hypertonic saline initiated to prevent cerebral oedema. Neurological examination revealed spontaneous intermittent horizontal eye movements and slow blinking. Right pupil was 5mm, irregular and not reacting, but left side pupil was 5mm irregular and sluggishly responding to light. Hypothermia maintained with ECMO circuit for 24 hours and Levipill injections given parenterally for seizure prophylaxis. Family and core government officials informed periodically about plans and prognosis.

On 5/12/16 team of doctors from AIIMS headed by Dr. Khilnani (along with Dr. Anjan Trikha, Dr. Devagourou and Dr. Rajiv Narang) visited the hospital and evaluated the condition of the patient. Detailed neuro exam and assessment of cardiac status were done periodically by a panel of doctors including intensivists, neurologist, cardiologist, cardiothoracic surgeons and pulmonologists multiple times during the evening of 5/12/16 after patient's temperature was brought back to normothermia.

Neurological exam revealed brainstem dysfunction. Patient never recovered a sustained intrinsic heart rhythm or effective ventricular ejection and was entirely dependent on VA ECMO. At 10 pm again examination of patient and ECMO were done by our team of doctors along with the AIIMS team of doctors and no intrinsic heart rhythm or viable ventricular ejection noted. After a detailed discussion amongst all the treating physicians and AIIMS expert panel, it was a consensus opinion that continuing VA ECMO and other organ supportive measures further was futile considering no intrinsic cardiac electrical and mechanical activity. This was conveyed to the Government officials headed by the Chief Secretary (Mr. Ram Mohan Rao) and the ministers headed by the Senior Cabinet Minister (Hon Mr. O. Paneerselvam), Lok Sabha Deputy Speaker (Mr. Thambidurai), Health Minister (Dr. Vijayabhaskar), Health Secretary (Dr. J. Radhakrishnan) and family (Ms. Sasikala). All of them understood the situation and consented for withdrawal of ECMO. After ECMO withdrawal patient was declared dead at 11.30pm on 5/12/16.

Cause of Death:

1. Ventricular Fibrillation
2. Infective Endocarditis
3. Acute Respiratory Distress Syndrome



For **CRITICAL CARE CONSULTANTS GROUP**
DEPARTMENT OF CRITICAL CARE MEDICINE
PRIMARY CONSULTANT

REPORT OF VISIT TO CHENNAI TO SEE HON'BLE CHIEF MINISTER OF TAMIL NADU

As per the order of the Director (vide F.10-1/99(D)-Estt.I dated 05.10.2016) a team of following specialists visited Chennai from 5.10.16 to 7.10.16.

Dr.G.C.Khilnani : Professor Department of Pulmonary Medicine and Sleep Disorders

Dr.Anjan Trikha : Professor Department of Anaesthesia, Critical care and Pain Medicine

Dr.NitishNaik : Professor, Department of Cardiology

The team reached Chennai at 8.15 pm on 5th October 2016 and went to Apollo Hospital where the Hon'ble chief minister is being treated in Intensive care unit

The team had a meeting with all the specialists who are looking after the hon'ble chief minister. These included Critical care Specialist (Intensivist) Pulmonologist, Cardiologist, Infectious disease specialist, Endocrinologist, Gynaecologist and others.

Hon'ble Chief Minister is 68 years old and has diabetes mellitus for last about 20 years on oral hypoglycaemic agents and hypertensive on medication. She also has history of recurrent cough (asthma/bronchitis). She has hypothyroidism and has features of irritable bowel syndrome. She weighs 106 Kg with height of five feet .

As informed by the treating team she presented to Apollo hospital on 22nd September 2016 with history feeling uneasy, and altered level consciousness and had low blood pressure.

She has had fever for last about seven days which was diagnosed as urinary tract infection and treated with oral antibiotics. Prior to that she had atopic dermatitis for which she received systemic corticosteroids. The urine culture grew E coli and candida. She also received antifungal treatment for same. Her diabetes was also uncontrolled with random blood sugars around 400 mg/dl.

She also had fever and leucocytosis at the time of admission. She was treated with bronchodilators and supportive treatment in the form of oxygen and non-invasive ventilation, fluid resuscitation and inotropic agents. Also she was started on injectable antibiotics based on blood culture (Enterococcus faecalis sensitive to Ampicillin and Ceftriaxone). She also received other antibiotics for variable length of time (Cefoparazone-sulbactam, Azithromycin, Meropenem, Teicoplanin, Daptomycin, Tigecycline and Polymyxin.. Her transthoracic echocardiogram done by the treating team revealed mitral annular calcification and mild mitral regurgitation. The other valves were normal. The left ventricular systolic function as measured by the ejection fraction was normal along with evidence of diastolic dysfunction. She also received diuretics. After that she had recurrent episodes of breathlessness and bronchospasm which was treated with inhaled bronchodilators, inhaled corticosteroids and at times systemic corticosteroids and diuretics. On this treatment she was improving and fever subsided and total leukocytosis count improved. There was also bilateral pleural effusion for which Pig tail catheter was put on both the sides. The pleural fluid was transudative.

On 28th September she had severe breathlessness and altered level of consciousness which did not respond to bronchodilators and non-invasive ventilation, so had to be intubated and put on mechanical ventilation. She required sedation and paralysis at the time of intubation. The sedation is in the form of fentanyl and midazolam which is continued since then. Over this time Leucocytosis and procalcitonin returned to normal. Transesophageal echocardiogram was done and revealed extensive mitral annular calcification, mild mitral regurgitation along with a vegetation on the mitral valve. Her previous echocardiogram done about an year ago (by the same echocardiographer who did her present echo) had also revealed mild mitral regurgitation with similar left atrial and left ventricular dimensions. Diuretics were given according to clinical condition. She also required inotropic support in low dosages to maintain blood pressure. Supportive treatment and antibiotics and bronchodilators were continued.

On the day of our visit (October evening), she was on full ventilatory support with invasive monitoring and required diuretics and inotropic support in low dosages. On evaluation of serial X-rays of the chest there was evidence of bilateral pleural effusion and bilateral pulmonary infiltrates suggestive of pulmonary oedema. Our team examined her and suggested tracheostomy for further management and reducing the sedation. It was also opined that that the procedure should be performed by and ENT surgeon in operation theatre (instead of percutaneous tracheostomy).

The option of surgical intervention for mitral regurgitation was discussed by the treating team. Prof. Nitish Naik opined that immediate surgery at this point of time for the same was not preferred because of very high operative risk, incomplete therapy of infective endocarditis and presence of mild mitral regurgitation on the echocardiogram which had not increased in severity from her echocardiogram done last year. However, a close watch was required to assess for any increase in severity of mitral regurgitation, development of new lesions/ other valvular involvement or any other possible indication for surgery for infective endocarditis.

We again examined her on the morning and evening of 6th October. The clinical condition remained same. All this time discussions were held with the treating team and the same was conveyed to the Chief Secretary of Tamil Nadu and Chairman of the hospital Dr. Prathap Reddy.

The surgery (Tracheostomy) was performed at 4.30 AM on 7th October and which was uneventful. After the procedure she was stable and at 11 AM she was responding to verbal commands. The blood pressure was maintained with small dosages of inotropes. She required one unit of blood transfusion during course of her illness.

Presently Hon'ble chief minister is on full ventilatory support and other medications including small dosages inotropes (to maintain blood pressure). Our team is of the opinion that she continues to be critically ill and it will take quite some time to recover from the present condition. Our team emphasized the need of aggressive physiotherapy, and continuing infection control practices. The team also commended the meticulous medical management imparted by the treating team. We have forwarded our mobile phone numbers and E mail addresses with the treating team and hospital administration to be in touch with us for follow up and discussion on further management.


Dr. G. C. Khilnaji


Dr. Anjan Trikha


Dr. Nitish Naik

REPORT OF VISIT TO CHENNAI (9.10.16 to 10.10.16) TO FOLLOW MEDICAL PROGRESS OF HON'BLE CHIEF MINISTER OF TAMIL NADU MS J JAYALALITHAA

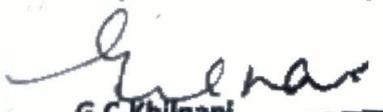
As per the Directions I visited Chennai to review the medical condition of Hon'ble Chief Minister of Tamil Nadu Ms.J.Jayalalithaa on 9.10.16 evening and returned on 10.10.16 evening. Following is the report of my visit to Apollo Hospital Chennai. This is in continuation the previous report submitted on 8.10.16

I reached Apollo Hospital at about 10 pm on 9.10.16. There was issue of change in the health condition in the form of increasing lung shadows on X-ray of the chest. I took briefing from the treating physician Dr.Babu Abraham and examined the Chief minister. I opined that the change in her health condition was because of collection pleural effusion on both sides(Collection of fluid in the cavity covering the lungs. Due to that there was change in her respiratory parameters. It was decided to intensify therapy in the form of achieving negative fluid balance and drain the fluid.

Also the urine culture grew bacteria (Urinary tract infection) and the same bacteria were cultured from the tracheal aspirate(secretion from lungs). Appropriate antibiotic(Meropenem) was started based on sensitivity report. She continued to be on full support on mechanical ventilation and other medications. Her diabetes is well controlled on intravenous insulin therapy. After that I briefed the officials (The Hon'ble Health Minister of Government of Tamil Nadu and Principal Secretary , Health) about her Medical condition.

Next morning(10.10.16) visited the hospital at 8.30 am and examined the Chief minister. Her condition was stable on life support. Along with treating team it was decided to continue the newly introduced antibiotics(Meropenem) for a total period of 7 days. It was discussed and agreed to reduce the sedation to hasten recovery and liberation from life support(Mechanical ventilation). After r having detailed discussion regarding the medical condition and plan of action I briefed the Hon'ble Health minister and officials regarding her medical condition.

Over all the Hon'ble Chief Minister is slowly progressing but stable on life support and she would required Medical care in ICU and hospital for a longer period of time (few weeks depending on the response to treatment)


G.C.Khilnani

Professor,

Department of Pulmonary Medicine and Sleep Disorders

REPORT OF VISIT TO CHENNAI (13.10.16 to 15.10.16) TO FOLLOW MEDICAL PROGRESS OF HON'BLE CHIEF MINISTER OF TAMIL NADU MS J JAYALALITHAA

As per the Directions a team of following specialists visited Chennai from 13.10.16 to 15.10.16.

Dr.G.C.Khilnani : Professor Department of Pulmonary Medicine and Sleep Disorders (13-10.16 to 15.10.16)

Dr.Anjan Trikha : Professor Department of Anaesthesia, Critical care and Pain Medicine(13.10.16)

Dr.NitishNaik : Professor, Department of Cardiology(14.10.16-15.10.16)

The team (Dr.GC.Khilnani and Dr.AnjanTrikha) reached Chennai and visited Apollo Hospital at a 1.30 pm. The Hon'ble chief minister was still on life support and there was collection fluid in the pleural cavity which was drained by putting in tubes (pig tail catheter). She was responding to verbal commands and was communicating with lip movements and could move her legs and feet on her own. Her vital parameters were stable and she was receiving injectable antibiotics. The treating Pulmonologist advised CT scan of the chest and abdomen which was done. For doing the CT scan sedating medications had to be administered. I visited the hospital again in the evening.

On 14.10.16 Dr.G.C.Khilnani and Dr.NitishNaik, examined and reviewed the reports and CT scan. Subsequently all the specialists had a meeting to decide further course of action. This was held in the office of Dr.Prathap. C. Reddy, Chairman of Apollo group of Hospitals. After detailed discussions it was decided not to do any active intervention for pleural effusion and continue same treatment with negative fluid balance and life support.

In the evening a video conference was arranged with John Hopkins Institute (Dr.Russel, Cardiologist). In this meeting all the treating physicians and along with two of us participated. The conference lasted for about an hour and each aspect the medical reports and treatment was discussed. Dr.Russel completely agreed with the line of medical treatment of the Chief minister.

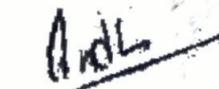
On 15.10.16 the Chief minister was better and her blood oxygen parameters were improving. After examining her there was briefing for the Senior ministers and Government officers (including the Chief secretary) in the office of Dr.Prathap C Reddy. All the details about the progress in the medical condition was communicated and discussed in detail. The team emphasized and conveyed to the group that the complete recovery of the Hon'ble Chief Minister is going to take some time (few weeks)

The senior ministers (including The Minister of Health) and Senior officers and Dr.Prathap C Reddy appreciated All India Institute of Medical Sciences for sending the team three times at a very short notice. They also appreciated their Medical advise of the team.

The team returned in the evening of 15th October evening after reviewing the clinical progress which is encouraging.

We have forwarded our phone numbers and are in touch with the treating physicians and have been discussing the progress with treating team regularly.


Dr.G.C.Khilnani


Dr.Anjan Trikha


Dr.NitishNaik

REPORT OF VISIT TO CHENNAI TO SEE HON'BLE CHIEF MINISTER OF TAMIL NADU

As per the order of the Director, AIIMS, a team of following specialists visited Chennai on 3.12.16.

Dr.G.C.Khilnani : Professor Department of Pulmonary Medicine and Sleep Disorders

Dr.Anjan Trikha : Professor Department of Anaesthesia, Critical care and Pain Medicine

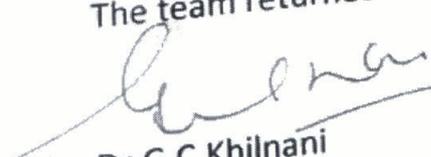
Dr.Nitish Naik : Professor, Department of Cardiology

Dr. Nikhil Tandon: Professor and Head , Department of Endocrinology

The team reached Chennai at about 4 AM (3.12.16) and visited Apollo Hospital at 9.00 AM where the Hon'ble chief minister was being treated. This was a follow-up visit as the team had visited twice prior to this visit.

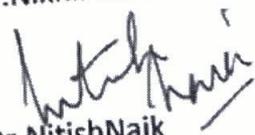
The team had a meeting with the treating doctors which included Intensivist, cardiologist and Endocrinologist regarding the progress of health of Hon'ble Chief Minister. We were informed that the Hon'ble Chief minister was progressing well and was undergoing physiotherapy regularly. She was on tracheostomy and required minimal respiratory support in the night. In the day time she was on low flow oxygen. She was fully conscious. She could sit in the chair for 20 minutes or so but could not stand as there was neuromuscular weakness. The electrophysiological study was done two days back and the Neurologist informed that the results were consistent with Critical illness polyneuropathy. The visiting team opined that the Hon'le chief Minister would require physiotherapy for recovery but knowing the natural history of critical illness polyneuropathy, it would take time (weeks to months) for complete recovery. The team further opined that the cause of episodic hypertension (fluctuations in blood pressure) was unlikely to be due to an endocrine pathology and no invasive cardiologic investigation or intervention was indicated in the present condition. The team appreciated the high quality care imparted by the treating doctors and emphasized the role of physiotherapy and rehabilitation

The team returned back on the same evening(3.12.16)


Dr.G.C.Khilnani


Dr.Anjan Trikha


Dr.Nikhil Tandon


Dr.NitishNaik

REPORT OF VISIT TO CHENNAI TO SEE THE HON'BLE CHIEF MINISTER OF TAMIL NADU

As per the order of the Director a team of following specialists visited Chennai from on 5.12.16

Dr.G.C.Khilnani : Professor Department of Pulmonary Medicine and Sleep Disorders

Dr.Anjan Trikha : Professor Department of Anaesthesia, Critical care and Pain Medicine

Dr.R.K.Narang : Professor, Department of Cardiology

Dr. Dr.V.Devagourou: Professor, Department of Cardiothoracic and vascular Surgery

The team reached Chennai at about 5 pm on 5.12.16 and went to Apollo Hospital where the Hon'ble chief minister was being treated in Intensive care unit(ICU). This was a follow-up visit as the team had visited three times prior to this visit and had returned only on 3.12.16

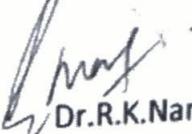
The team had a meeting under the chairmanship of Dr.Pratap C Reddy, the Chairman of Apollo Hospital where the treating team including Intensivists, Cardiologist, Cardiothoracic Surgeon and Neurologists were present. The team was informed that the Hon'ble Chief minister had a cardiac arrest at about 4.30 pm (4.12.16) and received cardiopulmonary resuscitation for 45 minutes following which an open cardiac massage was done and was put on ECMO(extracorporeal membrane oxygenation) and external cardiac pace maker. She was also put on hypothermia and was on continuous hemodialysis. The neurologist opined that there was no response to any stimuli, however, true neurologic status could not be assessed because of hypothermia. It was decided to bring the body temperature to normal and then assess the status again after a few hours once the normal body temperature is attained.

An assessment was again done at about 10 PM on the same day while the normal body temperature was attained. On clamping the tube of ECMO (extracorporeal membrane oxygenation) there was rapid drop in blood pressure, indicating that the heart had no function. Also on momentarily switching off the pacemaker there was straight line on ECG monitor. There was no neurologic improvement as opined by the Neurologist. All parameters denoted 'futility' of life support.

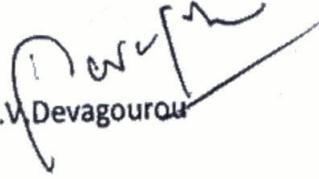
Subsequently a meeting was held again under the chairmanship of Dr. Pratap C Reddy. The case was discussed in detail and our team agreed with the inference regarding futility of life support in view of clinical parameters. It was decided that the treating team will discuss the present clinical situation regarding futility of life support with the family, members/relatives of hon'ble Chief Minister and take further decision.

The team returned back in the morning of 6.12.16


Dr.G.C.Khilnani


Dr.R.K.Narang


Dr.Anjan Trikha


Dr. Dr.V.Devagourou