

Intra Hospital Transfer of a Patient Undergoing Brain CT Scan, A Case Report

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Abstract

Background: Complications common during intrahospital transport (IHT) of patients and may have major effect on patient's outcome.

Case presentation: Here we report a case of 47 years old female patient who was admitted to our hospital with a diagnosis of adult congenital heart disease (Atrial Septal Defect) clinically presented with palpitations; shortness of breath on exertion and on/off throbbing headache. The consulting clinicians requested further imaging for operative planning; among them a brain CT scan was requested, following symptoms presented which revealed Brain Glioblastoma. This tests (CTscan) is not available within our hospital Jakaya Kikwete Cardiac Institute (JKCI) which necessitated temporarily transfer to Muhimbili National Hospital (MNH) 300 meters away where CT scan machine is available. During transfer the patient experienced serious cardiac arrest rushed to Emergency Department for resuscitation.

Conclusion: This case report confirms that intra hospital transfer of critically ill patient still carries considerable risks and complication/s and appropriate measures need to be taken.

Keywords: Atrial Septal Defect; Glioblastoma; Intra Hospital Patient Transfers; CT Scan; Case Report

Introduction

Jakaya Kikwete Cardiac Institute (JKCI) is a national tertiary hospital; super specialized in managing advanced Cardiovascular disease patients within and neighbouring countries, situated in the same compound with Muhimbili National hospital (MNH) a 2000 bed capacity hospital, being the largest hospital in the country and another tertiary centre Muhimbili Orthopaedic and Neurosurgery a more than 700 beds capacity hospital.

The purpose of this case report is to provide information of possible complication/s associated with intra hospital transportation (IHT) of critically ill and second objective; is to make medical practitioners, nurses, drivers and ancillary health care personnel involved in the transfer of patients be more aware of the potential for various complications that may occur during patient movement from one centre to the another location within the Muhimbili campus, focusing on risk reduction and preventive strategies.

Case Presentation

Patient is 47 years old female who was admitted at our hospital a known case of adult congenital heart disease (Atrial Septal Defect) presented with complaints of chest discomfort/pain on exertion associated with palpitation, breathlessness, and on/off frontal headache for the past 3 weeks. Prior to the current admission she was under conservative management but got partial relief and so on the current admission she underwent detailed 3D echocardiography which revealed dilated right atrium and ventricle with severe tricuspid regurgitation RVSP 42.0 mmHg, preserved systolic function (EF > 50%) figure1. CXR showed cardiomegaly figure 2. Following her complains of frequent headaches and general body malaise. These attacks of headache occurred randomly, and were not provoked by any stimuli, and there were no focal neurological symptoms presented. Due to her past medical history of congenital heart disease (ASD) with features of heart failure (NYHA II/III) she was treated with Metoprolol, Lisinopril, Furosemide and Aldactone. She was monitored with 24-hour ambulatory blood pressure and Holter device. In her past medical history she denied syncope attacks, use of tobacco or abuse of alcohol. Cardiac, CNS, infectious, and metabolic causes for headache were considered for differential diagnosis. During the course in the hospital there was a continuous complaint of headache. Brain imaging computed tomography (CT) head scan was requested by attending physician this lead to the need of transporting the patient to MNH (a hospital approximately 400 meters from our location in the same compound-Muhimbili as CT machine is not available in our centre) to exclude any brain lesion/pathology involvement figure 3.

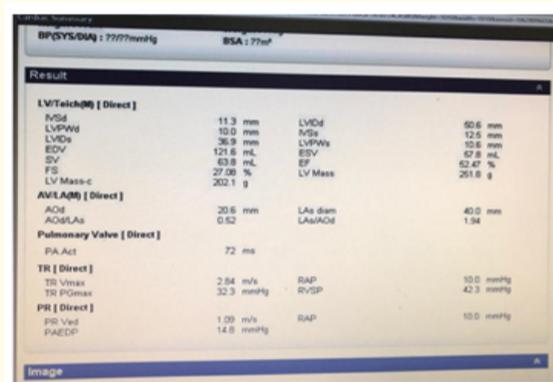


Figure 1: A and B. A 3D echocardiography picture revealing a dilated right atrium and ventricle with severe tricuspid regurgitation RVSP 42.0 mmHg, preserved systolic function (EF > 50%).



Figure 2: Grossly enlarged heart shadow obscuring lower lung zones. Hilar vasculature is prominent with cephalization. Perihilar artery projecting as opacity in the left hilar region. Blunted cost phrenic angle. Gross cardiomegaly with features of pulmonary hypertension with possible pleural bilaterally effusion.

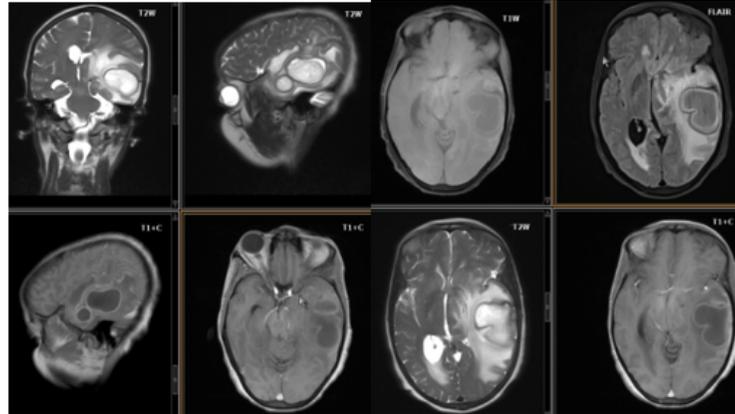


Figure 3: MRI a large irregular intra-axial lobulated left temporal parietal lobe mass peripheral enhancing with central non enhancing suggesting necrosis present. The mass is surrounded by edema and exerts positive mass effect and causes subfulcrine herniation to the right of 1.01 cm and ipsilateral lateral ventricle effacement. Features are suggestive of Glioblastoma (GBM).

Following the brain scan request the patient was transported to the Radiology Department of the Muhimbili National Hospital (MNH) in a hospital ambulance with a driver accompanied with attending ward nurse (who has no critical care experience), or a respiratory therapist, because of lack of enough skilled manpower with the mentioned speciality. Upon arrival at the imaging department which is 400 meters away the patient suffered a serious cardiopulmonary arrest, which forced her to be rushed to the Emergency Medicine Department and underwent multiple attempts of successive CPR before returned to the Radiology Department to proceed with the imaging requested which showed signs of glioma. She was discussed with multidisciplinary team with a conclusion to transfer her to MNH surgical department for further treatment and later to be referred to Oncology Institute in the same city.

Discussion

Here we report case of 47 years old female patient who was admitted to our hospital with adult congenital heart disease (Atrial Septal Defect) clinically presented with palpitations, shortness of breath on exertion and on/off frontal headache for the past 3 weeks. The consulting clinicians requested a battery of investigation including imaging of brain (frequent headaches) for cardiac operative planning. Following the brain scan request the patient was transported to the Radiology Department of the Muhimbili National Hospital (MNH which is 400 meters away) in a hospital ambulance with a driver accompanied with attending ward nurse (who has no critical care experience), or a respiratory therapist, because of lack of enough skilled manpower with the mentioned speciality.

Intra-hospital transport of critically ill patients is unavoidable and is associated with an increased risk of adverse events [1]. Here we report the challenge/s during IHT of critically ill patients within Muhimbili campus. The care of severely ill patients in our three hospitals (MNH, MOI and JKCI) can involve transportation, both within our hospital to undergo a procedures and tests, and between hospitals. Such transfers may be temporary (e.g., to obtain diagnostic imaging CT Scan, MRI, Digital X-ray, advanced eye examination, Coronary Angiography, Echocardiograph) or for a permanent transfer (e.g., transfer from inpatient ward to an intensive care unit in another hospital within the compound because of newly established diagnosis example stroke, tuberculosis which are not under our care. JKCI is exclusive for cardiac cases). Our patient required transfer to MNH for brain imaging to rule out brain lesion.

These transfers are critical transitions in which complications and death may occur. Risks associated with IHT have been suggested to be independent of the duration of hospitalization. Of interest, the distance travelled between locations may affect care delivery, qual-

ity and outcomes. Hence, benefits of IHT must outweigh the risks, and a triage-like process should be instituted and followed in order to optimize the risk-benefit ratio for each IHT. No patient should be transported for a test or procedure that is unlikely to alter care [2,3]. Our patient was found to have brain glioma which definitely changed the course of her treatment to give priority to brain surgeon and oncologist before the cardiologist this particular case. The availability of checklists and/or the presence of specially trained personnel may mitigate complications and untoward outcomes. Furthermore, physicians must be aware that such transfers may be time consuming for nurses, health attendants, and drivers hence requires significant team effort and specific knowledge is mandatory. Finally, whenever a point-of-care alternative of similar clinical utility is available, such option should be considered before exposing the patient to the risk of IHT. Our patient was transported in an ambulance with a driver accompanied with attending ward nurse only (who has no critical care experience), or a respiratory therapist, because of lack of enough skilled manpower with the mentioned speciality.

In reviewing this case, reading the available literature, and discussing with colleagues here their observation (unpublished data), it became clear that the intrahospital transport of critically ill patients is a topic both with a relative paucity of literature and a low level of awareness among medical staff in our three centres handling such critical cases. These factors combine with environmental factors related to IHT origin and destination settings example in our case there is poor road infrastructure potholes in some areas of the compound, transporting patients in stretchers with hot conditions 32 degrees centigrade, rains, dust contribute to a unique and difficult to predict risk profile [3,4].

Furthermore, team coordination between our three hospitals (MNH, JKCI and MOI), communications, and resources availability are vital should emergency or unexpected situations occur during IHT. Transport protocols should include requirements for routine checks and maintenance of equipment used during transport and at destination. Furthermore, collaboration with other health care providers in our case MNH and MOI as receiving destination should be undertaken prior to the transport. The receiving team should confirm their readiness of receiving the patient for immediate procedure or testing before the transport commences. The minimal requirements in IHT destination locations include suction device, an oxygen source, accessible electric connections, monitoring devices of equal calibre to the ICU, and a readily available "crash cart".

In our Muhimbili compound there have been a number of negative outcomes reported to be associated with the intrahospital transport of critically ill patients, including death (unpublished observation). The incidence of such events occurring during transport or within the first 24 hours after transport may approach 68% as reported previously. Furthermore, the incidence of adverse events requiring therapeutic intervention during transport has been reported to range from approximately 4 - 9%. The variability in incidence is likely related to the definition of "adverse event," the patient's severity of illness, and variable institutional practices and/or lack of reporting considering it's an expected incidence or incidences [5-8]. Our patient we believe was saved by the incidence (arrest) occurred while she was already in MNH where the emergency department was readily available and did the needful had it happened while driving to MNH outcome could have been detrimental.

Conclusion

Transportation of critically ill patients should only occur when the benefits of a procedure or diagnostic test outweigh the risks. Moving these patients should only happen when there is appropriate monitoring and other necessary equipment in the presence of trained personnel who are familiar with the care of such patients.

Further studies of the concise physiologic insults arising during IHT would be of value for implementation of targeted strategies to ameliorate IHT related complications among our three hospitals.

Author's Contribution

MJ - managed the case, reported the case, collected background information, wrote the manuscript. RM, PP, NM, DK and FL- managed the case, reported the case collected background information.

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