

CARDIAC REHABILITATION OF A PATIENT WITH BILATERAL CONGENITAL ANOPHTALMIA UNDERGOING CORONARY ARTERY BYPASS GRAFTING SURGERY

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Contribution

SAAN conceived the idea of the case report. SDHZ collected the pictures. MZH finalized case report. MID did final review. All authors contributed equally to the submitted case report.

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ABSTRACT

Objective: A 60 years old male, bilaterally anophthalmic patient, presented to the out-patient department with the complaints of substernal chest pain at rest and exertional shortness of breath for the past one month. He had a past medical history of congestive cardiac failure with reduced ejection fraction and hypertension for an undocumented period. The patient underwent cardiac catheterization and coronary artery disease (CAD) was diagnosed. Coronary artery bypass grafting surgery (CABG) was planned. Two counselling sessions were called pre and post-operatively to educate the patient and his family about his condition and his visual status emphasizing the need of an individually tailored cardiac rehabilitation program. Aural and haptic modalities were used so that the patient could perceive better. Despite, a systematic approach the patient returned unstable on his second follow-up visit, which suggests that a more robust and supervised approach is needed for the rehabilitation of visually impaired patients as they have limited mobility and accessibility.

Key Words: Coronary artery disease, Anophthalmia, Coronary artery bypass grafting, Rehabilitation.

INTRODUCTION

Cardiac Rehabilitation, a fundamental part of secondary prevention of cardiac diseases, has evolved from simple monitoring to a multidisciplinary approach. The objectives of cardiac rehabilitation are not only to help the patients regain regular physical, mental and social state but also to help control modifiable risk factors along with therapeutic education of the patients.¹ Cardiac rehabilitation has proved to be clinically effective for patients with coronary artery disease or heart failure undergoing percutaneous coronary intervention (PCI) or coronary artery bypass graft surgery (CABG) by decreasing all-cause mortality, cardiovascular related hospital re-admissions or by improving health related quality of life and exercise capacity.²⁻⁴ We have described here a case of cardiac rehabilitation in a patient with a bilateral congenital anophthalmia undergoing CABG.

CASE PRESENTATION

A 60 years old unemployed male with a history of bilateral congenital anophthalmia, congestive cardiac failure with reduced ejection fraction (HFrEF), and hypertension presented to the out-patient clinic with complaints of substernal chest pain at rest and exertional dyspnea for past one month (Figure 1). Cardiac catheterization was done and coronary artery disease (CAD) was diagnosed. On ophthalmic examination, the palpebral fissures were small, there was a small cystic enlargement on the medial left infra-orbital margin and there were no palpable eyeballs with empty orbital sockets. All other examinations were insignificant. The patient was admitted for CABG surgery.

A pre-operative educational counsel, headed by the cardiac surgeon, anesthesiologist, and cardiac trained physiotherapist, was arranged with the patient and his family, emphasizing the need of assisted and individually-tailored cardiac rehabilitation post operatively to optimize the restoration of functional capacity of the patient considering his visual status. On-pump CABG was done through the conventional median sternotomy approach. The patient was extubated within six hours of the same day he was

operated on. Intra-aortic balloon pump for cardiac assistance was placed in on the second post-operative day for a period of approximately 24 hours due to low output.

Cardiac phase I rehabilitation was started. All exercises and procedures were explained verbally by the attendant who had already been elaborated by the team. The patient was made to feel all the objects beforehand. Triflo incentive spirometry with 5-10 incentive breaths an hour each day was advised with an attendant documenting the progress. The patient stayed in CCU for three days post-operatively and was shifted to ward on the fourth post-operative day on a wheel chair to avoid physical exertion. The patient was made to stand up from his bed for at least two minutes a day. Step down exercise, a total of 12-16 repetitions twice a day, was started after getting the drain out. The patient was made to hold on to the attendant while performing the exercise. Multiple internal, external rotations at shoulder and hip joints, flexion and extension at elbow and knee joints were advised for limbs mobility. The chest mobility was achieved by passive chest percussions. The patient was discharged on the seventh post-operative day when he was able to walk across the room with his cane. Keeping in mind the patient's visual impairment, second counseling session was called with the patient and his attendant prior to the discharge. The patient's unfamiliarity with the braille system, his inability to assess wound healing and lack of any past vision rehabilitation history was discussed. Sternal precautions were explained, and the patient was advised to walk for a considerable distance at least three times a week with assistance or do aerobic exercises for at least 30 minutes twice a week as phase II out-patient rehabilitation. The first follow up visit, four weeks after the discharge, was insignificant. Seven weeks after the surgery, the patient showed up for his second follow-up visit with unstable non-dehisced sternum (Figure.2). He was hypotensive and had low volume pulse, looked weak and anorexic with notable weight loss. The patient's attendant reported that the patient was non-adherent to the routine rehabilitation. The patient opted for palliative and medical care and he did not choose to undergo reparative surgery.

Figure 1: Bilateral Congenital Anophthalmia With Minimal Palpebral Fissures and A Cystic Swelling on the Medial Left Infra-Orbital Margins



Figure 2: Unstable Non-Dehisced Sternum; Seventh Week Follow Up Visit

DISCUSSION

Congenital anophthalmia is defined as the absence of eye globe in the orbit at birth. It can be classified as unilateral or bilateral. The current prevalence of anophthalmia is estimated to be 3 per 100,000 population. The defect has a complex etiology. It could be due to chromosomal duplications, deletions, or translocations and it could be due to the involvement of SOX2 transcription factor.⁵ Since it is relatively rare, the prevalence data is scarce especially in developing countries like Pakistan.

Our case is unique in a way that it reports an individually tailored cardiac rehabilitation of a bilateral anophthalmic, adult patient who has been blind since birth and has undergone CABG. Patients with childhood blindness have high under-five mortality rates due to the underlying conditions especially in developing countries and many of these patients do not reach adulthood resulting in scarcity of data regarding the incidence of adulthood diseases, their management and rehabilitation in such patients.⁶ Reviewing literature, this is the first case to our knowledge in Pakistan and South-Asian region.

Although cardiac rehabilitation has been studied over the years, there are limited data on whether the visual status of a patient affects the outcome of cardiac rehabilitation. There have been several reports of transient cortical blindness following coronary angiography or bypass grafting where only affirming reassurances were made to the patients before visual restoration occurred within minutes to hours in those cases.⁷ However, we used an individually tailored cardiac rehabilitation for our patient considering his untreatable and permanent blindness. We used verbal commands to dictate the phase-I rehabilitative process through the patient's attendant. We also made the patient to feel all instruments and objects prior so that he has better perception as it has been documented by Greenway R, et al that language is of prime importance in patients with visual impairment aiding in better understanding and perception of the surroundings⁸. These patients depend upon verbal and haptic modalities to compensate for their visual status. We used exercises to which our patient was adherent and had minimal difficulty in performing those exercises. We opted for a home-based phase-II rehabilitation

considering patient's remote residence, lack of transport and poor socioeconomic status as home-based and center-based rehabilitation have similar benefits.⁹ Two counseling sessions were called pre and post-operatively to discuss the patient's condition, educate the patient and the family about visual impairment and its potential influence on the patient's cardiovascular health as counseling and patient's education are considered as integral parts of any rehabilitation program¹. We also advised the attendant to document his progress every day and assess his sternal wound healing. Despite such management plan, our patient showed up hemodynamically unstable on his second follow-up visit.

CONCLUSION

Cardiac rehabilitation is proven to be effective in patients with cardiovascular health problems and yet it remains unused, especially in low-income developing countries. People with visual impairment have limited physical activities and cannot assess sternal wound, we suggest that these patients should undergo a more extensive and supervised cardiac rehabilitation after cardiac surgery.

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