Physical activity on physiotherapy conduct protocol for hospital discharge precocity

ABSTRACT: The present study aimed at defining and applying a precocity physiotherapist conduct protocol (PPCP) to patients who went through a cardiac surgery; in order to help the recovery of the patient, through an appropriate semiology, thus, decreasing a lot the time of internment at an intensive therapy unit (ITU) and also at the hospital. This inquiry was inserted in the thematic area of motor activity related to the health and the physical performance, in the string of research of prophylactic and therapeutic aspects of programs of promotion of health, mastership in the Science of the Human Motor Activity of the University Castelo Branco. This study was presented about patients who were affected by coronary artery disease (CAD) and who went through a cardiac surgery for precocity of hospital discharge both at the intensive therapy unit and ward. Sixty patients among men and women were researched and divided in two groups. G1 Control Group (n=30) and G2 Experimental Group (n=30) aged 40-88. A respiratory kinesiotherapy was carried out without the use of the superior limbs, emphasizing lungs basis, the patients were not put in right or left lateral decubitus and on the first day of ward they walked. In order to deal with time, variance analysis (ANOVA) was used, Wilcoxon test, test T of “Student” and the Qui-square. Afterwards, a “post hoc” verification was undertaken, via a Turkey-Test, under ANOVA.

Keywords: Physiotherapist Conduct, Cardiac Surgery and Precocity of discharge.
INTRODUCTION

The coronary arterial disease (CAD) is, according to WHO (World Health Organization), the second major death causer in the current world, losing only for the encephalic vascular accidents (EVA).

The most common etiologic agents of this pathology nowadays are: obesity, stress, tabagism, high blood pressure and, specially, sedentarism. The saturated fat (fries and animal’s fat) is little by little being deposited and adhered onto the arteries’ walls, together with the fibrinogen deposition which, afterwards, turns into fibrin. Its accumulation takes shapes of plaques which are called atheroma plaques. This obstruction, when in the coronary arteries, reduces the blood flow which is directed to the myocardium for its oxygenation with ideal pressure and ideal temperature to keep the corporal metabolism

After the operating procedure, the patient is transferred to Intensive Care Unit (ICU) where s/he will undergo clinical and physiotherapeutic support, in addition to the nursery one. In this sector, s/he will be weaned from ventilatory prosthesis; will carry out respiratory and musculoskeletal (locomotor) exercises going to a private room or nursery, and afterwards hospital discharge home.

From the patient’s arrival to the ICU, we will begin the protocol of precocious physiotherapeutic conduct aiming at diminishing the hospital admittance time, and avoid problems related to atelectasis, pneumonia, pleural effusion, and so forth.

Study’s Justificative

Due to the lack of previous studies and having in mind the continuity of pulmonary complications such as atelectasis, pleural effusion, pneumothorax, cerebrovascular accident and the extended hospital admittance stay that may, above all, bring psychological problems for this patient.
METHODOLOGY

Two groups were studied. One for control accomplished the traditional treatment and the other was an experimental one which was submitted to the protocol of precocious physiotherapeutic conduct, both randomized and demanding the accomplishment pre-test and post-test.

The study was conducted in Rio de Janeiro, at the Hospital de Clínicas in Jacarepaguá – Taquara, a neighborhood of Rio de Janeiro, with men and women who are CAD (coronary artery disease) carriers and who were submitted to myocardial revascularization (MR) between January and May in 1999. Patients submitted to emergency MR, patients with pulmonary pathologies and the ones who have denied passing through the experiment were not included in the study.

All the sample’s participants were informed about the experiment and have signed a participation document, in accordance with the National Health Counsel.

The groups were divided randomly in: G1 as the control group (n=30) and G2 as the experimental group (n=30).

The following instruments were used in this study:
- Bird 6400 ventilator (USA)
- Triflow II (respiratory encourager) - Sherwoor Medical (USA)
- Pulse Oximeter - Vital Line am 78100 B (USA)
- PEEP valve - Vital Sings (USA)
- Cardiac monitor (FC / SatO2) Vital Line (USA)
- Biauricular stethoscope - Littemann Quality (Germany)

The PPPC has started with the explanation of the program to the patient in the pre-surgery phase. After the surgery (in the ITU) the ventilatory monitoring with Bird 6400 was conducted with the following parameters.
- Current volume (CV): 8-10 ml/kg
- FiO2 = 100%
- Respiratory frequency: 10 - 14 irpm
- PEEP: 3 - 5 cmH2O

After the monitoring and doctor attendance, it was included a respiratory kinesiotherapy in bed without the use of MMSS emphasizing maneuvers for lung bases, specially the left lung base.

For the ablation and extubation, the patient should present the following parameter as basic requisites:
- Awake and cooperative;
- \( \text{PaO2} > 70 \text{ mmHg} \) with \( \text{FiO2} < 50 \% \); \( \text{PaCO2} < 50 \text{ mmHg} \);
- Respiratory frequency < 30 irpm;
- PH around 7.35 - 7.45;
- Current Volume > 5 ml / Kg weight.

In the first two hours, the patient was put in the Fowler from 45° to 60°, even with mediastine and thorax drains. Fowler 90° was used after removing the mediastine’s drain. We did not use lateral decubitus because they can provoke the external’s crepitation, leading to an intense algic condition. The patient sat away from bed even in IUC.

After the extubation, deep inspirations and maximum inspiratory sustenance were applied (Triflow) every 1 hour aiming at optimizing the pulmonary insufflations, cough, muscular strength and improving the patient’s clinical performance.

The expiratory positive pressure in the air pathway (EPAP) was used every 2 hour to prevent of atelectasis due to the increase of intra-alveolar pressure the end of expiration and the same in the functional residual capacity.

Criteria for ICU discharge:
- \( \text{PaO2} > 89 \text{ mmHg} \)
- \( \text{PaCO2} < 51 \text{ mmHg} \)
- \( \text{FR} < 22 \text{ irpm} \)
- \( \text{VC} > 7 \text{ ml / Kg} \)
- Peak flow > 9 % of VC
- FC > 64 bpm < 101 bpm
- X-ray presenting discrete condensations in the basis
- \( \text{SaO2} > 95 \% \)

The data collection obeyed the following steps: a) first encounter for the study explanation; b) monitoring of mechanical respiration; c) applying of daily methodology; d) daily register of hospital discharge criteria.

Graphic 1 – Internment time in ICU

Graphic 2 – Internment time in ward
The level of statistic significance was of $P < 0.05$, it was used statistical techniques of several modalities as the T of students, ANOVA one way was evaluated the intra and inter groups.

**RESULTS**

The studied age group for the experimental group varied from 40 to 88 years old on age group average of 59 years and standard deviation of 9.1 and for the control group was of 59.5 years old and standard deviation of 11.9.

The graph1 demonstrates some difference in the time of ICU admittance of patients in the control group, with average of 3.1 days and standard deviation of 1.0, and the experimental group with 2.2 days and standard deviation of 0.8.

In relation to the time of nursery admittance the time average for the experimental group was of 2.6 day with standard deviation of 1.0 and for the group control with average of 4.8 days and standard deviation of 2.5 demonstrated in the graph 2.

It was also studied the time of ablaction of these patients, in which the experimental group presented the mean of 4.7 hours with standard deviation of 1.0 and for the control group with mean of 12.7 hours and Standard deviation of 7.5 (cf. graph 3).

Finally, as regards the total mean time of hospital admittance, the experimental group presented as in all the others the lead of 4.8 days with standard deviation of 0.8 against 7.9 for the group control with 2.5 of standard deviation of 2.5 (cf. graph 4).

With relation the physiological parameter with current volume and respiratory frequency for the experimental group also presented positive difference comparing to the control group as demonstrate in the graphs 5 and 6, as the current volume presented $P = 0.8763$, therefore without statistical significance. It is important to highlight that all the others (except for the age and current volume) obtained $P < 0.05$, and thus with statistical significance.

**CONCLUSIONS**

It is verified through the obtained results of statistical procedures, which both groups were randomly taken in a universe of patients, for they did not present significant difference with each other before the surgery. We could clearly observe the superiority of results for patients subjected to PCPF comparing to the one treated with...
the traditional methodology. Comparing the literature, Yazbek & Battistela (1994), Guzman (1991), it was evidenced that the precocious mobilization is essential after the cardiac surgery, and which even with the patient being admitted to an ICU, at once we can make use of the protocol without the superior limbs. It is important to point out the previous explanation to the patient in the surgical act and the steps to be carried out in the post-operative recovery. The physical exercise practice, as well as the life style, provides the human organism with a series of metabolic, cardiorespiratory and musculoskeletal adaptations, which bring benefits to the general functioning of symptoms, affording health, and mainly good life quality.

The knowledge about the answers and physiological alterations contribute considerably for the physiotherapist’s acting so that s/he can establish a program of treatment better suitable for each patient.

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