

Nursing Care of a Patient with Coronary Anomaly Undergoing Aortic Dissection Surgery: A Case Report

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ABSTRACT

Type I and Type II Aortic Dissection is a condition that requires urgent surgical treatment. Because of its potential to affect all organs, these patients should be operated on without delay. Patients may experience other symptoms such as myocardial infarction (MI), abdominal pain, fainting, confusion, hemiparesis, hemiplegia, severe pain in the lower extremity, shortness of breath, or difficulty in swallowing. A 56-year-old male patient with no known diseases was admitted to the emergency department with a sudden onset of severe pain radiating to the back. In the first examination, he was conscious and cooperative, blood pressure was 190/100 mmHg, heart rate was 110/minute, and temperature was 37° C. There was no MI finding in the electrocardiogram of the patient. On echocardiography, the diameter of the ascending aorta was large and there was a flap inside. The patient was diagnosed with Type I aortic dissection after hemogram and CT angiography taken after biochemistry results. The Roper, Logan, and Tierney Model of Nursing has been implemented in this case report for the patient's diagnosis. The patient was discharged with full recovery on the 12th postoperative day after he was admitted to the cardiovascular surgery service.

Keywords: Aortic Dissection, Nursing Care, Cardiovascular Surgery

Introduction

Type I and Type II Aortic Dissection is a condition that requires urgent surgical treatment. Because of its potential to affect all organs, these patients should be operated on without delay. Every hour that passes results in an increase in morbidity and mortality. Although its etiology is not known exactly, it can be the result of many factors such as hypertension, connective tissue diseases, traumas, infective diseases, pregnancy, or iatrogenic. Although aortic dissections affect all age groups, most cases (75%) are between the ages of 40-70. There is a clinical finding that manifests itself with sudden and typical severe pain in the chest and back with increased intravascular pressure after intimal injury. However, these symptoms may not be seen in every patient. Clinical dissection may vary according to the involvement site of the flap. Patients may experience other symptoms such as myocardial infarction (MI), abdominal pain, fainting, confusion, hemiparesis, hemiplegia, severe pain in the lower extremity, shortness of breath, or difficulty in swallowing. Therefore, aortic

dissection is a disease that should be kept in mind with patients presenting these symptoms in the emergency department. Definitive diagnosis can be made with echocardiography and computed tomography (CT) angiography, which is performed after the clinical examination.

Case Report

A 56-year-old male patient with no known diseases was admitted to the emergency department with a sudden onset of severe pain radiating to the back. In the first examination, he was conscious and cooperative, blood pressure was 190/100 mmHg, heart rate was 110/minute, and temperature was 37° C. There was no MI finding in the electrocardiogram of the patient. On echocardiography, the diameter of the ascending aorta was large and there was a flap inside. The patient was diagnosed with Type I aortic dissection after hemogram and CT angiography taken after biochemistry results (Figure 1). On CT, the diameter of the ascending aorta was 6 cm, and the flap appearance was

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Received: 24.03.2025, Accepted: 17.09.2025

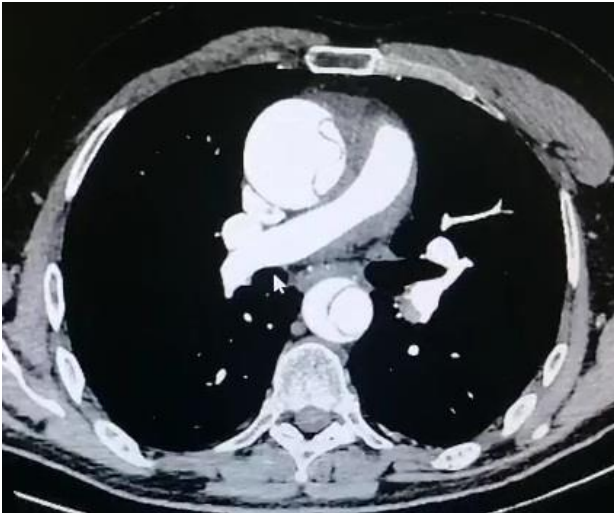


Fig.1. CT angiography, Type I aortic dissection

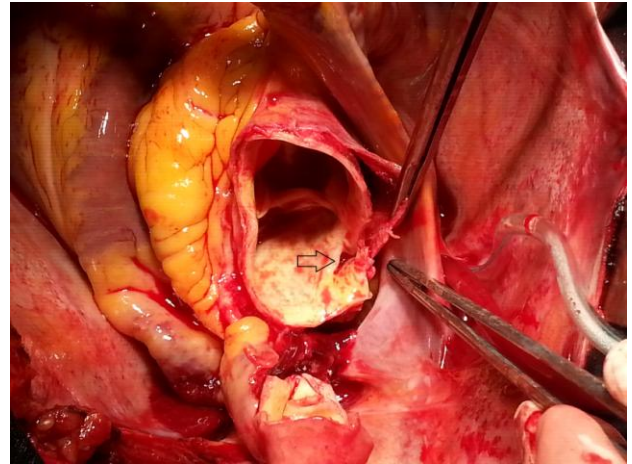


Fig. 3. Coroner anomaly

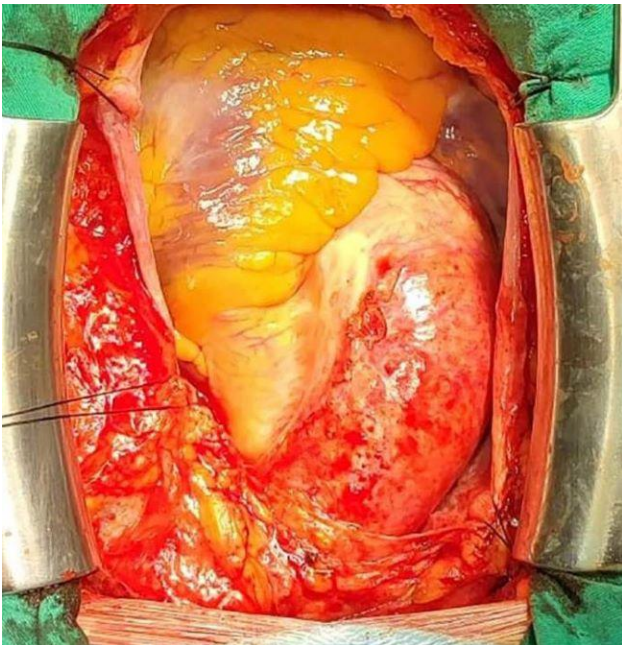


Fig. 2. The ascending aorta was observed to be enlarged

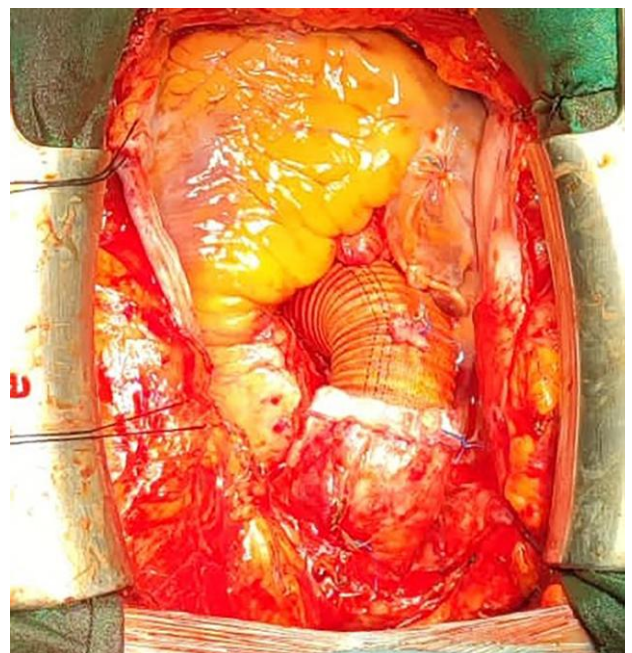


Fig. 4. 30 Dacron tube graft

observed in it, starting from the ascending aorta and extending to the iliac arteries. After the requested cardiovascular surgery consultation, emergency surgery was planned for the patient, and he was taken into operation. The patient was taken to the operating table and after necessary sterilization was achieved, heparinized and arterial cannulation was performed via the right femoral artery. A median sternotomy was performed, and the ascending aorta was observed to be enlarged (figure 2). A right atrial two-stage venous cannulation and a cardiopulmonary bypass was performed. An aortotomy was performed and coronary ostia were found and cardiac arrest was achieved. Typically, the left main coronary artery

should be in the left coronary valve of the aortic valve, but in this patient, it was seen in the noncoronary valve and the dissection flap started from here (figure 3). A proximal anastomosis was performed using a number 30 Dacron tube graft. The patient was cooled to 18° C and a distal anastomosis was performed by entering total circulatory arrest (TCA). The TCA duration was 14 minutes (figure 4), after which the patient was warmed up. When the patient's temperature and pressures returned to normal, the cardiopulmonary bypass was discontinued with a low-dose supportive treatment. After the operation, the patient was admitted to the cardiovascular surgery intensive care unit for follow up treatment and monitoring. In cardiovascular surgery, many problems may occur

in patients after surgery. Nurses provide care to patients with a systematic approach and utilize models and theories to enhance the quality of the services they offer to individuals and society (1). The Model of Nursing, is a humanistic model developed by Roper, Logan, and Tierney that evaluates the individual as a whole, identifying and solving problems. In this model, maintaining a safe environment, communicating, breathing, eating food and drinking fluids, eliminating body wastes, personal cleansing and dressing, controlling body temperature, mobilizing, working and playing, expressing sexuality, sleeping and dying activities are present (2). In this case report the following nursing diagnoses have been identified: acute pain, infection risk, and bleeding risk in the maintaining a safe environment activity; impairment in spontaneous respiration in the breathing activity; fluid volume imbalance, inability to self-feed in the eating food and drinking fluids activity; lack of self-hygiene in the personal cleansing and dressing activity and disruption in sleep pattern in the sleeping activity. Necessary nursing interventions were applied to the patient with medication administration, nutrition, mobilization, pain management and breathing exercises (triflo blowing, balloon inflation and coughing exercises), aseptic wound care, infection control measures, bleeding monitoring, oxygen therapy, intake-output charting, assistance with feeding and hygiene and sleep hygiene practices for these identified problems (3). The patient was discharged with full recovery on the 12th postoperative day after he was admitted to the cardiovascular surgery service.

Discussion

Aortic dissection, whose mortality and morbidity are reported to increase by 4% every hour if left untreated, is a disease with a high mortality rate. Many factors are involved in its etiology, which include hypertension, atherosclerosis, connective tissue diseases, pregnancy, family history, aneurysms, aortic coarctation, and bicuspid aorta valve (4). This disease has a 65% chance of beginning in the ascending aorta, a 20% chance in the descending aorta, a 10% chance in the aortic isthmus, and a 5% chance in the abdominal aorta. Men are affected 4 times more than women (5). The incidence is higher in people with Marfan and Ehler Danlos Syndrome, which is one of the connective tissue diseases. The most common symptom is sudden and severe chest and back pain. In addition, symptoms may vary depending

on the organ involved. If cardiac tamponade occurs due to a rupture, then confusion, vomiting, shortness of breath and fear of death may occur (6). Abdominal pain, hematemesis and diarrhea may occur due to involvement of the mesenteric artery. Depending on the involvement of the carotid arteries, neurological findings, ischemic attack, hemiparesis and hemiplegia can be seen. As a result of the involvement of the coronary artery, symptoms of myocardial infarction and rhythm disorders may occur. Ischemia and claudication may also be seen due to involvement of the extremity arteries (7).

According to the literature, the incidence of coronary artery anomaly varies between 0.46% and 1.55% in the whole population. It is thought that the cause of sudden death, especially in young athletes, is the result of the left main coronary artery coming out of the aortic right sinus of the Valsalva and being compressed between the pulmonary artery and aorta due to the increasing pressures during exertion and not allowing flow (8). In a study by Hill et al., 2,304 death cases were examined, and it was found that 31 cases (1.3%), with a mean age of 28, were patients with coronary artery anomalies. Fifteen (48%) of these 31 cases were reported to have died after excessive exercise (9). In a study conducted by Altın et al., a total of 5,548 patients who underwent angiography were examined, and an anomaly was found in the aortic outflow of the coronary artery in 68 cases (1.2%) (10, 11). In a study conducted by Yüksel et al., 16,573 patients were examined, and a coronary artery anomaly was found in 48 (0.29%) patients. The most common of these were circumflex arteries originating from the right coronary artery in 28 patients (58.3%) and the right coronary artery originating from the left anterior descending artery in 6 patients (12.5%) (12).

Conclusion and Recommendations: Complaints may arise with advancing age, increased exercise capacity, or any cardiac problem. Atherosclerosis accompanying coronary anomalies may emerge as a risk factor with advancing age. Computed tomography (CT) is a recently introduced technique that can detect early-stage coronary artery stenosis, the course of the coronary arteries within the heart, and coronary anomalies. It is important to keep in mind the possibility of aortic dissection, coronary artery disease, and anomalies when experiencing chest pain in hypertensive patients with a family history of coronary artery disease. Consequently, the primary goal after major surgery is to ensure a healthy return to life.

During this risky period, the care provided by nurses is crucial for improving patients' quality of life. Approaching the nursing care process within the framework of theories and models, such as the Roper-Logan-Tierney Nursing Model, can both improve nursing perspectives and contribute to earlier discharge.

Abbreviations: computed tomography (BT), myocardial infarction (MI), total sirkulatuvar arreste (TCA)

Informed Consent: Written informed consent was obtained from the patient.

Author Contributions : Concept A.K.G., H.Ü.; Design A.K.G., H.Ü.; M.E.A; Data Collection and/or Processing M.E.A., C.Y.B.; Analysis and/or Interpretation A.K.G., H.Ü.; M.E.A.; Writer A.K.G., H.Ü.; D.Ç.B.

Conflict of Interest: Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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