

CASE REPORT

OLGU SUNUMU

FEMORAL NERVE INJURY DUE TO INTERVENTIONAL ANGIOGRAPHIC PROCEDURES

Buket TUĞAN YILDIZ, Mustafa GÖKÇE, Deniz TUNCEL, Hamza ŞAHİN, Muhammet Yusuf USLUSOY

Kahramanmaraş Sütçü İmam University Faculty of Medicine, Department of Neurology, Kahramanmaraş

ABSTRACT

With the increasing number of diagnostic and interventional vascular procedures in recent years, there has also been an increase in complication numbers due to these. Because the femoral artery is most common used for catheterization, femoral nerve, that is closely related to it, can be damaged. A 70- year- old woman presented with right leg weakness and numbness in the second week after digital subtraction angiography, cardiac stenting and right and left carotid stenting. Single leg numbness and weakness after angiography and catheterization, may be related to femoral nerve injury.

Key Words: Angiography, catheterization, femoral nerve.

ANJİOGRAFİK GİRİŞİMSSEL İŞLEMLERE BAĞLI FEMORAL SİNİR HASARI

ÖZET

Son yıllarda tanınal ve girişimsel vasküler işlemlerin sayısının artmasıyla birlikte, bunlara bağlı komplikasyon sayılarında da artış görülmektedir. Kateterizasyon için en sık femoral arter kullanıldığından, buna yakın seyreden femoral sinir hasarı görülebilmektedir. Yetmiş yaşında kadın hasta dijital substraksiyon anjiografi, kardiyak stent ve sağ ve sol karotis stentleme işleminden sonraki ikinci haftada sağ bacakta güç kaybı ve uyuşma ile başvurmuştur. Anjiografi ve kateterizasyon işlemleri sonrasında tek bacakta uyuşma ve kuvvetsizlik femoral sinir hasarı ile ilgili olabilir.

Anahtar Sözcükler: Anjiografi, kateterizasyon, femoral sinir.

INTRODUCTION

There are more complications associated with increased diagnostic angiogram (DA) and interventional procedures (IP). The complications seen in DA and IP are divided into two groups: neurological and non-neurological complications. Neurological complications include transient ischemic attack (TIA), ischemic stroke and hemorrhagic stroke. Non-neurological complications, however, are associated with catheter entry and contrast agent use. The duration of the procedure, the experience of the clinician performing the procedure, the number of catheter changes, the catheter size, the extent of the catheter manipulation, and the amount of contrast material used are important factors in the development of complications (1). The femoral nerve may be damaged due to the frequent preference of the main femoral artery during catheterization. A rare case of femoral neuropathy, developed after angiography, will be presented.

CASE REPORT

A 70-year-old female patient was admitted to an external clinic with weakness in her left arm and leg, and her neurological symptoms improved within 24 hours. In order to investigate the etiology of GIA, carotid Doppler USG was performed to the patient, and referred to our clinic for interventional evaluation on the detection of severe stenosis in the internal carotid arteries (ICA). The patient was hospitalized in our service for performing TA. Her history showed she had hypertension, diabetes, coronary artery disease. There were no signs in neurological examination (NE) except lack of global deep tendon reflexes (DTR) linked to diabetic neuropathy. Angiography showed short segment 95% stenosis in the right ICA high cervical segment, and 95% stenosis in the left ICA origin. A carotid stenting was planned for the patient. However, in this process, coronary angiography was performed by cardiology 7 days after DA, due to the chest pain of the patient.

Corresponding author: Buket Tuğan Yıldız MD, Kahramanmaraş Sütçü İmam University Faculty of Medicine, Department of Neurology, Kahramanmaraş, Turkey.

Phone: 03443003434

E-mail: bukettugan@yahoo.com

Received: 24.08.2018

Accepted: 20.12.2018

This article should be cited as following: Tuğan Yıldız B, Gökçe M, Tuncel D, Şahin H, Uslusoy M.Y. Femoral nerve injury due to interventional angiographic procedures. Turkish Journal of Cerebrovascular Diseases 2019; 25 (3): 181-183. doi: 10.5505/tbdhd.2018.36693

There was a stenosis in the right coronary artery, and coronary stenting was performed. Since it was symptomatic, the right ICA intervention was planned and stenting was performed to the right ICA 7 days after coronary stenting, and to the left ICA 1 month later. After the femoral sheath was removed, 2 sandbags of 5 kilograms were placed in the right groin area to provide hemostasis, the first one was removed after 2 hours, and the second one was removed after 4 hours. While there was no complication during and after the procedure, on the 10th day follow-up, the patient complained about the pain in the right leg for the last 3 days. The right groin area of the patient, who had no new featured detected in NE, was checked with a physical examination and USG. No hematoma, pseudoaneurism, fistula, etc. was detected. In the control examination after one month, she had pain and numbness down the right side of the knee, and she could not load her right leg while walking, and she had a rotation in her knee. Her examination showed a degree of weakness in right hip flexion (iliopsoas muscle: 4/4) and knee extension (right quadriceps muscle: 5/5), and hypoesthesia and dysesthesia in the area that matches the saphenous nerve area on the inner side of the knee-ankle. DTR could not be taken globally as in previous examinations. EMG was performed to the patient with a preliminary diagnosis of right femoral nerve neuropathy. Denervation potentials were obtained in needle EMG examinations of right vastus medialis and rectus femoris muscles. The compound muscle action potential (CMAP) amplitude obtained from rectus femoris muscle by stimulation of the right femoral nerve was 0.7 mV, while the CMAP amplitude obtained from the left was 3.3 mV. Moderate right femoral nerve neuropathy was reported. Pregabalin 2x75 mg was administered for the patient's neuropathic pain, with a plan to increase dose when necessary. Quadriceps strengthening exercise was recommended. The patient had no complaints at the control examination performed after 3 months. The patient's neurological examination was normal.

DISCUSSION

The number of complications started to increase as the number of diagnostic and interventional vascular procedures increased in

the last decade. The main femoral artery is the most preferred place for cardiac and endovascular interventional procedures. The femoral nerve travels in the lateral of the femoral artery and is vulnerable to injury during interventional procedures (Figure). In addition, vascular intervention from the femoral artery during angiography can cause direct compression of the femoral nerve and nerve damage by causing hematoma, pseudoaneurism (2).

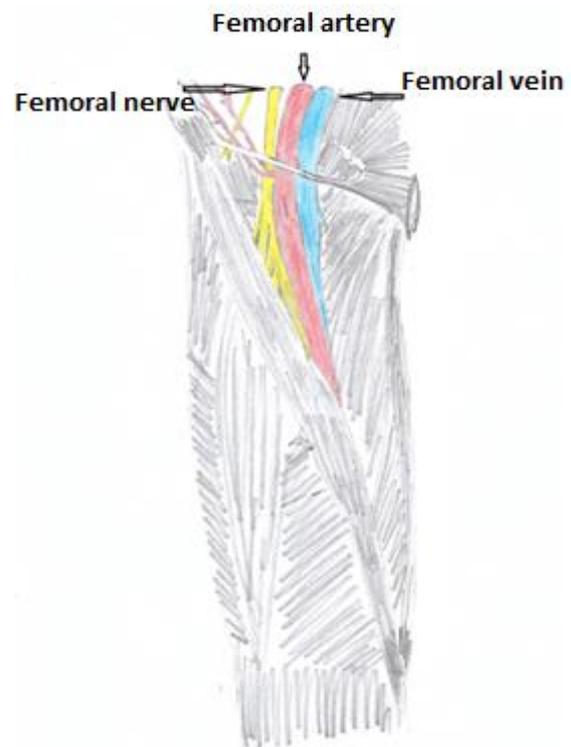


Figure. Anatomical neighborhood of femoral nerve and femoral artery.

Ali Sallı et al. identified a case of meralgia paresthetica, developed due to compression of the lateral femoral cutaneous nerve, after coronary angiography performed 2 times with a 3-day interval (3).

El-Ghanem et al. investigated the incidence of femoral nerve damage in patients who underwent femoral percutaneous catheterization. In the national patient registry data, they identified femoral neuropathy in 597 of the 15,894,201 patients who underwent percutaneous femoral catheterization over 8 years. They found higher incidence of femoral neuropathy in younger age,

women, hypertension, diabetes mellitus, dyslipidemia, and coagulopathy patients (2).

Hallet et al. examined 50 patients with catheter-related femoral artery damage, and found that the most common chronic complaint in these patients was leg pain due to femoral nerve damage (30%). They found that the most common lesion causing this nerve damage was pseudoaneurism (87%) (4).

Barçın et al. presented cases of femoral nerve damage developed during the coronary angiography procedure performed with femoral artery catheterization, and argued that this damage was occurred due to femoral nerve damage during intervention because of the needle or due to the accumulation of prilocaine, administered during the procedure, in the myelin sheath of the femoral nerve (5).

Our patient, however, suffered femoral nerve damage after an angiographic interventional procedure. We believe that the cause of the damage may be due to damage on the femoral nerve passing through in the neighborhood of the main femoral artery, during the intervention, or due to compression of the femoral nerve caused by sandbags placed over the puncture site to provide hemostasis after angiographic interventional procedure. Repeated catheterization in a short period of time has increased the risk of damage to the femoral nerve. One cause of femoral nerve damage after angiography may be hematoma at the puncture site, nerve compression due to pseudoaneurism. However, our patient was carefully monitored for these complications after the procedure, and these complications did not develop. During the post-discharge examination in the outpatient clinic, there was no pathology in the groin area.

REFERENCES

1. Cooperative Study between the Society of Interventional Radiology (SIR), American Society of Neuroradiology (ASNR), and Society of NeuroInterventional Surgery (SNIS). Quality Improvement Guidelines for Adult Diagnostic Cervicocerebral Angiography: Update. *J Vasc Interv Radiol* 2015; 26: 1596- 1608.
2. El- Ghanem M, Malik A, Azzam A ve ark. Occurrence of Femoral Nerve Injury among Patients Undergoing Transfemoral Percutaneous Catheterization Procedures in the United States. *Journal of Vascular and Interventional Neurology* 2017; 9(4): 54- 58.
3. Sallı A, Salbaş E, Albayrak İ ve ark. Tekrarlayan femoral kateterizasyon sonrası meraljiya parestetika. *Genel Tıp Derg* 2011; 21(3): 115-117.
4. Hallet J.W., Wolk S.W., Cherry K.J. The femoral neuralgia syndrome after arterial catheter trauma. *J Vas Surg* 1990; 11: 702- 706.
5. Barçın C, Kurşaklıoğlu H, Köse S ve ark. Transient femoral nerve palsy after diagnostic coronary angiography. *Anadolu Kardiyol Derg* 2009; 9: 248- 252.