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Süleyman SÜRER[1]
Kerem YAY[1]
Aynur CAMKIRAN[2]
Murat BEKMEZCİL[1]
Osman Tansel DARÇIN[1]

RESEARCH

CAROTID ENDARTERECTOMY WITH LOCAL ANAESTHESIA IN PATIENTS WITH ADVANCED AGE AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE: EARLY TERM RESULTS

ABSTRACT

Introduction: Carotid surgery is an important operation in terms of both intraoperative stroke risk and postoperative respiratory functions in patients with carotid artery stenosis requiring surgical treatment, and having comorbidities such as advanced age and chronic obstructive pulmonary disease. In this study, we retrospectively investigated whether carotid endarterectomy with conscious technique is an effective method in patients with comorbidities such as old age and chronic obstructive lung disease.

Materials and Method: Carotid endarterectomy with conscious technique was performed in 21 patients between February 2008 and August 2010. Four of the patients were female and 17 were male; the mean age was 72.3+5.1 years (range of 69-83 years). All patients underwent carotid endarterectomy under cervical blockage. A shunt was placed when needed and consciousness and movements of muscle strength were checked intermittently during the operation.

Results: An intraoperative shunt had to be placed in one patient. This patient developed postoperative hemiparesis and fully recovered with medical care. One patient developed difficulty in swallowing due to paralysis of N. Hypoglossus and improved with medical therapy. One patient with carotid and coronary lesions was scheduled to undergo a two-staged surgery and died from myocardial infarction following the carotid operation. All other patients fully recovered and were discharged.

Conclusion: Carotid endarterectomy with conscious technique greatly benefits patients by allowing close intraoperative motor and mental monitoring and by providing protection against complications of intubation in patients of advanced age with comorbidities such as chronic lung disease..

Key Words: Endarterectomy, Carotid; Conscious Sedation; Aged; Pulmonary Disease, Chronic obstructive.

ARAŞTIRMA

İLERİ YAŞ VE KRONİK OBSTRÜKTİF AKCİĞER HASTALIĞI OLAN HASTALARDA UYANIK TEKNİKLE KAROTİS ENDARTEREKTOMİ: ERKEN DÖNEM SONUÇLARI

ÖZ

Giriş: Cerrahi tedavi gerektiren ileri yaş ve kronik obstrüktif akciger hastalıkları gibi ek sorunları bulunan karotis arter stenozlu hastalarda gerek intraoperatif strok riski ve gerekse postoperatif solunum fonksiyonları açısından karotis cerrahisi önem arzetmektedir. Bu çalışmada amacımız uyanık teknikle karotis endarterektominin ileri yaş ve kronik obstrüktif akciğer hastalıkları gibi ek sorunları olan hastalarda etkin bir tedavi yöntemi olup olmadığı retrospektif olarak araştırıldı.

Gereç ve Yöntem: Şubat 2008-Ağustos 2010 tarihleri arasında 21 hastaya uyanık teknikle karotis endarterektomi uygulandı. Hastaların 4'ü kadın,17 si erkek olup yaş ortalaması 72.3+ 5.1 (69-83 yıl) idi. Tüm hastalara servikal blokaj altında ve gerektiğinde şant konularak operasyon süresince bilinç ve kas gücü hareketleri aralıklı olarak kontrol edilerek karotis endarterektomi uygulandı.

Bulgular: Ameliyat sırasında bir hastaya shunt uygulaması gerekli oldu. Postoperatif dönemde hemiparezi gelişen bu hasta medikal tedavi ile tam olarak düzeldi. Bir hastada N.hypoglossus felcine bağlı gelişen yutma güçlüğü medikal tedavi sonrası geriledi. İki aşamalı cerrahi planlanan karotis-koroner lezyonlu bir hasta karotis operasyonu sonrası myokard enfaktüsü nedeniyle kaybedildi. Diğer tüm hastalar şifa ile taburcu edildi.

Sonuç: Uyanık yöntemle karotis endarterektomisi özellikle hastaların intraoperatif motor ve mental yakın takibinin yapılabiliyor olması ayrıca kronik akciğer hastalıkları gibi ek sorunları olan ileri yaş hasta grubunda entübasyonun komplikasyonlarından koruması ciddi avantajlar sağlamaktadır.

Anahtar Sözcükler: Karotid Endarterektomisi; Sedasyon; Yaşlı; Kronik Obstrüktif Akciğer Hastalığı.

İletişim *(Correspondance)*

Süleyman SÜRER
Konya Meram Eğitim ve Araştırma Hastanesi, Kalp ve Damar Cerrahisi Kliniği KONYA

Tlf: 0224 360 50 50
e-posta: drsuleyman1@hotmail.com

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[1] Konya Meram Eğitim ve Araştırma Hastanesi, Kalp ve Damar Cerrahisi Kliniği KONYA
[2] Konya Meram Eğitim ve Araştırma Hastanesi, Anestezi ve Reanimasyon Uzmanı KONYA

Introduction

Carotid artery disease is one of the main causes of stroke, having a role in a third of all strokes (1). In randomized controlled studies and meta-analyses it has been demonstrated that stroke incidence and deaths have been decreased as a result of carotid endarterectomy performed for varyingly symptomatic or asymptomatic carotid artery stenoses (2,3). The aim of this study was to assess the intraoperative neurologic status, to protect elderly patients from intubation and associated complications, and to discharge patients from the intensive care unit at an early period by implementing carotid endarterectomy under local anesthesia (LA).

Materials and Method

This study was approved by the local ethics committee of Selçuk University School of Medicine. We investigated the early term outcomes of patients undergoing carotid endarterectomy under local anesthesia. The study was conducted by the Cardiovascular Surgery Department at the Konya Training and Research Hospital. Twenty-one patients underwent carotid endarterectomy with cervical block in our clinic between February 2008 and August 2010. Four patients were female and 17 were male. The mean age was 72.3±5.1 years (69-83 years). Carotid stenosis was diagnosed with history and physical examination followed by Doppler USG, coronary angiography, and carotid angiography. Three patients had a history of coronary artery bypass grafting. Two patients underwent coronary bypass operation 1 week after the carotid endarterectomy. Demographic data of the patients are summarized in Table 1.

Anesthesia and Surgical Technique

The anesthetic cervical block was carried out by an anesthesiologist. Half of an anesthetic mixture composed of bupivacaine, prilocaine, and epinephrine was administered to deep tissues while the other half was administered as a superficial block (4). Neurologic assessment, cognitive abilities, speech, patient attention, muscle strength and motion status were assessed periodically during the operation. Sedative status of the patients was monitored pre- and postoperatively using the Ramsey sedation scale (5). Standard carotid endarterectomy surgery and patch plasty were performed in all patients. No additional medication was given either preoperatively or postoperatively. With a longitudinal incision from the anterior of the sternocleidomastoid muscle to the sternoclavicular junction under local anesthesia, internal, external, and common carotid arteries were ligated with vascular tapes. Following a 5000 U heparin injection, endarterectomy was begun after a 30-second test. After placing vascular clamps, a longitudinal incision along the diseased segment was made from the anterior aspect of the proximal common carotid artery to the normal intima of the internal carotid artery. Arteriotomy repair was done using the saphenous vein and a 6/0 polypropylene suture in one patient. Primary arteriotomy repair was performed in two patients and a synthetic patch was used in another 18.

Table 1— Demographic Data of the Patients

	Number	Percent
Male	17	81.00
Female	4	19.04
Hypertension	7	33.33
Diabetes mellitus	6	28.57
Coronary artery disease	12	57.14
Chronic obstructive pulmonary disease	17	81.00
Transient ischemic attack/History of sequela	4	19.04
Smoking	15	71.43

Results

An intraoperative shunt was placed in one patient. Shunt placement was decided upon because of deterioration of verbal responses during neurologic examination both following carotid clamp placement and during monitorization. Patients left the intensive care unit for the regular ward at a postoperative time of three to four hours. One patient who developed hemiparesis in the postoperative period recovered fully with medical therapy. In one patient, difficulty in swallowing due to N. Hypoglossus palsy improved with medical therapy. One patient died from a postoperative myocardial infarction. That patient underwent coronary angiography and was scheduled to undergo coronary and carotid operations interspaced one week. No case proceeded to general anesthesia following an initial local anesthesia. No surviving patient had permanent sequela. Patients were discharged with full recovery. No neurologic or cardiac events, or mortality, were observed by the postoperative first and third month.

Discussion

Carotid artery stenosis is a serious health problem since it is associated with major neurological complications such as

stroke and death (2,3,6,7). In randomized, controlled, multicenter studies and meta-analyses it has been reported that stroke incidence and death were decreased as a result of carotid endarterectomy performed for varyingly symptomatic or asymptomatic carotid artery stenoses (2,3,7-9). Carotid artery stenosis severity justifying surgery depends on the symptomatology of the patient. According to the European Vascular Surgery guidelines, carotid endarterectomy is absolutely indicated for symptomatic carotid artery stenosis with a stenosis severity greater than 70% and probably indicated for stenoses with a stenosis severity greater than 50% (North American Symptomatic Carotid Endarterectomy Trial; NASCET), provided that the operative rate for stroke/mortality of the center is less than 6% (1). We also found a mortality rate of 4.7% (n=1). That patient was lost due to postoperative myocardial infarction. In a non-randomized multicenter study Rerkasem et al. found that, compared to general anesthesia, carotid endarterectomy performed with local anesthesia decreased stroke or death by 37%, myocardial infarction by 47%, and pulmonary complications and hospital stay by a significant percentage (2). In a multicenter, non-randomized study Tanganakul et al. reported that local anesthesia lowered stroke, death, myocardial infarction, pulmonary complications, and duration of hospital stay by 50% compared to general anesthesia (3).The GALA 2008 study did not reveal any significant difference between local and general anesthesia groups in terms of stroke, death, stroke or death, myocardial infarction, and duration of hospital stay at postoperative 30 days (6).

Rerkasem et al. found no significant differences between local and general anesthesia in terms of stroke, death, and myocardial infarction at postoperative 30 days. There were also no significant differences in other operative complications including local hemorrhage, cranial nerve damage, respiratory complications, placement of shunt, and duration of hospital stay (7).

Lutz et al. did not demonstrate any significant difference between local and general anesthesia groups in terms of death or stroke, whereas cerebral complications (ischemic attack and stroke) and hematoma rates were greater in general anesthesia. Their general anesthesia group exhibited more strokes compared to local anesthesia group (3.5% vs 2.3%). Hematoma rate was 6.4% with general anesthesia and 3.0% with local anesthesia. We also did not reoperate on any patient for a hematoma (8).

There is an ongoing debate on the appropriate approach to patients with the concurrent indications of coronary bypass and carotid endarterectomy. Various surgical strategies including one- or two-stage operations have been suggested to minimize perioperative neurological and cardiac complications (9-11). Gürer et al. suggested that local anesthesia should be preferred owing to the ability to monitor cerebral ischemia, eliminate of intubation and ventilatory support, and shorter hospital stay (12).

The common message of these studies is the influential effect of advanced age (70 years or older) and neurologic events on mortality (13). Chiti et al. reported a higher postoperative mortality with combined coronary bypass grafting and carotid endarterectomy in one sitting, compared to isolated carotid endarterectomy (14).

Our clinical experience and early results of carotid endarterectomy in awake patients are consistent with literature. In light of these data, we suggest that this method is feasible in select patients because of its ability to closely follow intraoperative motor and mental status, protect against the complications of intubation in patients with advanced age and comorbidities such as chronic lung diseases, and shorten hospital stay.

Conflict of Interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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