

Case Report



Femoral mononeuropathy post kidney transplants a very rare surgical complication in kidney transplantation: A case report

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Abstract

Kidney transplantation is accepted as the first choice treatment of chronic renal failure. While urologic complication is the most common surgical complication after kidney transplantation, femoral nerve injury is very rare, which in our department with 1500 kidney transplantation experiences between 1992 and 2019, we had only two reported cases of femoral mononeuropathy. A 55 years old woman with a duration of 4 years' dialysis (her donor was her son) and a female with the age of 45 years and duration of 3 years' dialysis (her donor was a cadaver) instantly after kidney transplant operation symptoms of femoral nerve injury were detected, which were the loss of knee jerk reflex, reduced resistance of knee and not being able to give the flexion position to the knee when standing or walking. The femoral nerve injury may be self-limited and it looks preventable with a careful handling of the pelvic iliac artery and gentle placement of the retractor and less time of ischemic and careful hemostasis.

Introduction

Kidney transplantation is accepted as the first choice treatment of chronic renal failure. While urologic complication is the most common surgical complication after kidney transplantation, femoral nerve injury is very rare, which in our department with 1500 kidney transplantation experiences between 1992 and 2019, we had only two reported cases of femoral mononeuropathy. Here we present two cases of the femoral nerve palsy post kidney transplantation, which were self-limited surgery complications, this complication is a very rare complication post kidney transplantation surgery, in the following part as a discussion topic we are going to have a discussion including the etiology, and how to prevent and how to managing this complication.

Cases

A 55 years old woman with a duration of 4 years' dialysis (her donor was her son) and a female with the age of 45 years and duration of 3 years' dialysis (her donor was a cadaver) instantly after kidney transplant operation symptoms of femoral nerve injury were detected, which were the loss of knee jerk reflex, reduced resistance of knee and not being able to give the flexion position to the knee when standing or walking. The patients were consulted by a neurologist and following magnetic resonance imaging (MRI) evaluations femoral mononeuropathy was diagnosed. They were mobilized by the barrel, and

after 4 weeks physical treatment and use of gabapentin a remission in the motor function of the nerve was observed and the patients were able to walk.

Discussion

The femoral nerve is a branch of lumbar plexuses that is formed by L2-L4 lying in the body of the psoas muscle where departs from 4 cm before the inguinal ligament. Three places are predisposed for injury of femoral nerve including a groove of iliopsoas groove, inguinal ligament, and psoas body. The femoral nerve is responsible for the motorization of the psoas muscle (hip flexion), buckling of the knee by the quadriceps, and controls the sensation of the internal side of thigh and calf. There are many modalities reported as the reason for femoral nerve injury, some of these modalities are hysterectomy,^{1,2} radiotherapy,³ and retroperitoneal hemorrhage.⁴ An Isolated femoral neuropathy is induced by pressure directly on nerve and by ischemia, which is caused by reducing perfusion of nerve due to the diversion of artery like anastomosing of the renal artery of allograft to the external iliac artery (steal phenomena). One of the mechanisms resulting in femoral nerve injury is the phenomenon of steal, which occurs after anastomosing the renal artery to the internal, external, or common iliac artery. If the pressure, that induces ischemia, is mild the result will be mild and reversible. The blood supply for the middle portion of the femoral nerve is from the internal

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iliac and the external iliac artery.

While the blood supply for the pelvic lumbar is from the inferior mesenteric artery and the vesical artery, and the blood supply to the middle and distal of the femoral nerve are from the internal or external iliac and common iliac artery so by anastomosing in these places, the steal phenomenon may occur.

The mild injury results in neuropraxic, which will be recovered as early as possible, but severe and prolonged injuries may result in axonal loss with extended recovery time or uncompleted recovery. Severe atherosclerotic is a compound factor predisposing to acute post-transplantation femoral neuropathy. Diabetes is the most common metabolic disease which causes spontaneous isolated femoral neuropathy with almost immediately recovery.

Since the right-side iliac artery supplies the femoral nerve more than the left side, then the left side is more susceptible to ischemic than the right side.⁵

To prevent the femoral nerve injury, it is guided to control the pulsation of the femoral artery after inserting the retractor,⁶ to use a short blade of abdominal retractor,⁷ periodic reassessment and evaluation of the retractor in lengthy-time.⁸ In addition, lengthy exaggerated lithotomy position repositioning seems necessary for prevention of femoral nerve injury.⁸

The symptoms of femoral nerve injury include loss of knee jerk and loss of sensation on anterior side of thigh and on the medial side of the leg. Beside, a change in the pressure over the femoral nerve may lead to a conduction block (neuropraxia) or axon degeneration (axonotmesis) by the nerves. During the lithotomy position, exaggerated hip flexion, abduction, and external rotation should be avoided and assistants should take care to avoid leaning on the limbs. Moreover, temporary repositioning of the limbs should be considered during lengthy operations.⁸ One of the most important tests for femoral nerve injury is the test of the elimination or diminish of patellar reflex or knee-jerk reflex. The test performs a sharp tap on the patellar tendon lying just below the kneecap, the sharp tap on the tendon of quads causes a stretch reflex which tests L2, L3, L4 of the spinal cord nerve. It must be mentioned that in the femoral nerve injury strengths of thigh adduction and ankle dorsiflexion are normal. There are femoral neuropathies reported as a result of diabetic Mellitus or the iliac artery aneurism.⁹ Furthermore, retroperitoneal bleeding and hematoma in the psoas muscle can result in femoral nerve injury.^{7,10} In operation for inguinal hernia as first time or secondary time (by using mesh) as in fail of the operated hernia the femoral nerve injury is possible.¹¹ In a study the role of the retractor in inducing femoral nerve injury has been insisted¹² also in another study female sex kinder and diabetic conditions mentioned as a risk factor for inducing the femoral nerve injury but the time of operation and the anastomosing time

are mentioned as a less important factor for the femoral nerve injury.¹³ It is claimed that if recovery doesn't occur in 3 months it is necessary to do surgical exploration for neurolysis, resection, or grafting.¹⁴

Conclusion

The Femoral nerve injury may be safe and it may be treated as a conservative treatment and with a careful handling of the pelvic iliac artery and gentle placement of the retractor and less time of ischemic and careful hemostasis it may be preventable.

Author's Contribution

Conceptualization: Afshar Zomorodi, Kamaledin Hassanzadeh.

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Competing Interests

Authors declare no conflict of interest in this study.

Ethical Approval

Written informed consent was obtained from the patients for publication of this report.

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