CASE REPORT
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Hip & Pelvis

Acute Gluteal Compartment Syndrome without Gluteal Hematoma -A Case Report -

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Acute gluteal compartment syndrome (AGCS) is a rare condition associated with trauma, drug abuse, alcohol intoxication, prolonged immobilization, hip arthroplasty and epidural anesthesia. We report the case of a 42-year-old woman presenting severe buttock pain following decreased lower extremity motor function after an incident whereby she rolled down a flight of stairs. We performed fasciotomy of the gluteal fascia in order to provide relief from acute gluteal compartment syndrome. At the 2 month follow up visit her sensory and motor function had improved. Acute gluteal compartment syndrome is a rare condition which can result in misdiagnosis or delayed diagnosis. Careful consideration is needed for patients suffering severe buttock pain.

Key Words: Acute gluteal compartment syndrome, Sciatic nerve, Fasciotomy

Introduction

Acute gluteal compartment syndrome is rare complication of crush injury. There is various causes of gluteal compartment syndomre such as trauma, prolonged immobilization, rhabdomyolysis, drug intoxication, malpositioning during surgery. The diagnosis of gluteal compartment syndrome is difficult because peripheral pulses are preserved and only neurologic sign was observed. Now we are about to report one case of acute gluteal compartment syndrome that the patient shows motor and sensory nerve paralysis without any past medical history.

Case

42-year-old female housewife visit to emergency room. She was rolled down on stairs, she complained severe left hand and buttock pain. Hand, pelvis and hip, spine X-ray was done, but no abnormality was detected. Her hand and buttock was severely swollen, but, motor, sensory circulation of fingers and toes was intact. House staff recommended to admission due to observation for developing of compartment syndrome of hand. But, she refused admission and dischaged to her house.

After 31 hours, she came to emergency room again, this time on a wheelchair. Her edematous symptom of left hand and buttock was aggravated, but there was no physical examination findings of acute compartment syndrome on left hand. On the other hand, her lower extremity motor function was decreased (Knee

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Extension/Flexion (G5/G4)., Ankle Extension/Flexion (G0/G0), Great Toe Extension/Flexion (G0/G0))(Fig. 1) and her sensory also decreased to pain, Touch, but anal tone, perianal sensation was intact. We further evaluated laboratory tests, MRI of spine and pelvis, and measured compartment pressure of left buttock. CPK was 49190U/L(0-145 U/L) and AST/ALT was 802/405 IU/L(10-36 IU/L / 7-38 IU/L), no other injury was observed. vital sign was stable.

On the pelvis T2 MRI, High signal intensity at left obturator externus/internus, quadratus femoris, gluteus maximus/medius/minimus, adductor brevis/minimus, pectineus muscles with overlying subcutaneous edema was found. But, there was no hematoma around sciatic nerve injury (Fig. 2). MRI of spine was non-specific finding except foraminal disc herniation at L3-4, L4-5. Compartment pressure at left buttock was over 45 mmHg. We thought acute gluteal compartment syndrome based on MRI finding, high compartment pressure, increased CPK, decreased motor and sensory function.

We made a decision of emergency operation. Under general anesthesia, We made a fasciotomy of the gluteal fascia and drained fluid collection (Fig. 3). Postoperative

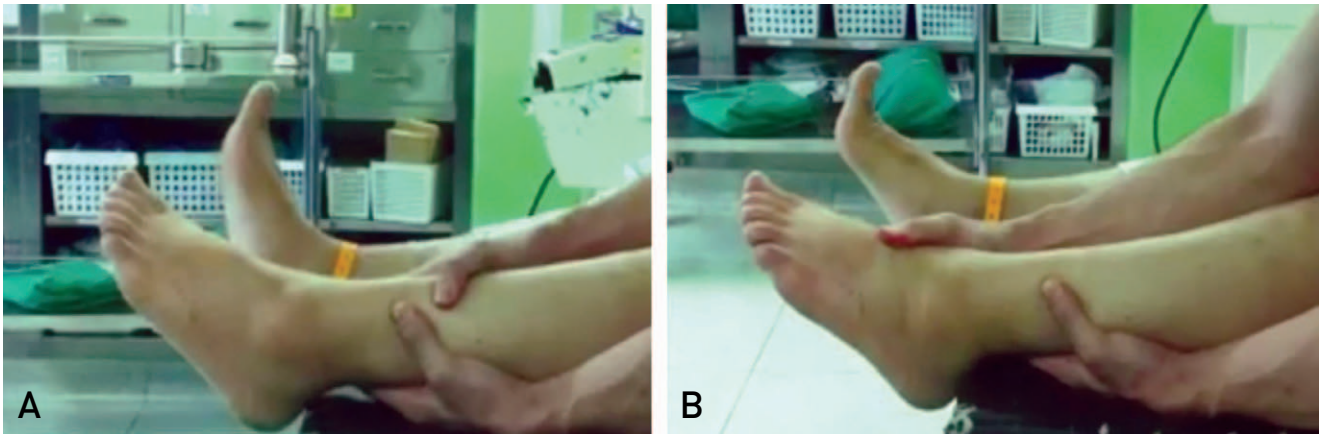

Fig. 1. (**A**) Preoperative range of motion of ankle dorsiflexion (Grade 0). (**B**) Preoperative range of motion of great toe dorsiflexion (Grade 0).

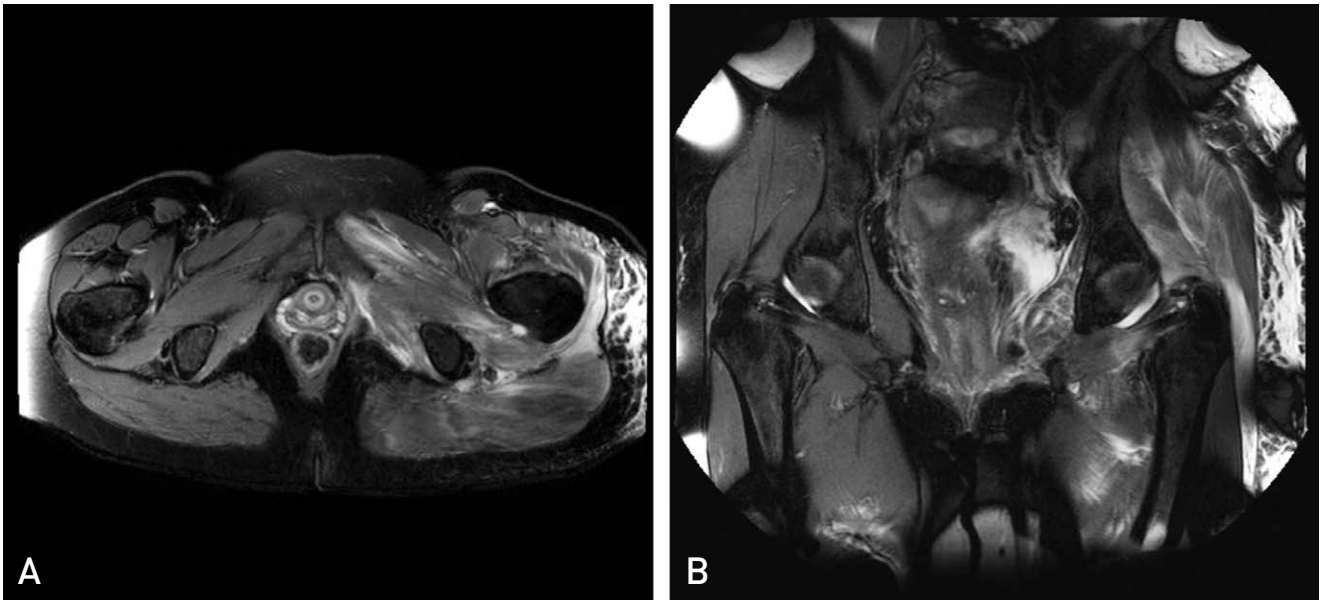

Fig. 2. Preoperative magnetic resonance image of hip; High signal intensity at obturator externus/internus, quadratus femoris, gluteus maximus/medius/minimus, adductor brevis/minimus, pectineus muscles with overlying subcutaneous edema, left.

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one day, her toe flexion, ankle flexion was recovered partially (G4). In EMG/NCV after 4 weeks follow up, We found incomplete sciatic nerve lesion around hip. After 2 months follow up. She was improved on sensory, and motor function.(G4+), and ambulated with cane.

We presented a case of acute gluteal compartment syndrome caused by simple gluteal injury. Although gluteal contusion treated with pain control with medications, rest, the risk of acute gluteal compartment syndome should be considered in severe buttock pain, swollen of the buttock and increased blood CPK. So careful physical examination and close follow up is important.

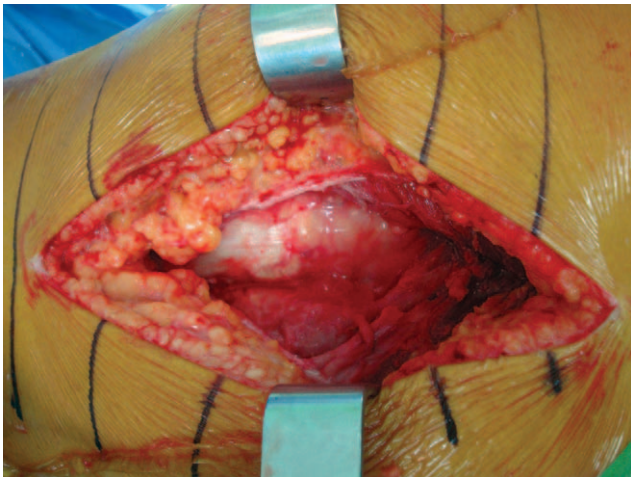

Fig. 3. Intraoperative finding; Subcutaneus edema and fluid collection between iliotibial tract and proximal femur.

Discussion

Gluteal region has a three compartment; 1) Gluteus maximus, 2) Gluteus medius-minimus, 3)Tensor fascia lata compartment. Increasing interstitial pressure of these compartment, lead to compression of muscle, nervous system, blood vessel. Then decreased blood supply make tissue hypoxia and fatal necrosis[1,4]. Acute gluteal compartment syndrome (AGCS) is rare condition associated with trauma, drug abuse, alcohol intoxication, prolonged immobilization, hip arthroplasty, epidural anesthesia[2-4,7-9]. In Korea, there was one report of acute gluteal compartment syndrome following trauma. It can easily be misdiagnosed as gluteal contusion because peripheral pulses are preserved and only neurologic sign was observed.

Diagnosis of AGCS is based on clinical symptoms; severe buttock pain with bruising, swelling ,weakness of affected muscle, and nerve palsy such as sciatic nerve. Sciatic nerve isn't lies in gluteal compartment, but because it lies between gluteus maximus and external rotator muscle, it can be appected by swelling of gluteal compartment[1,3,6].

Other methods for diagnosis of AGCS is measuring of gluteal compartment pressure. Over 30 mmHg pressure are considered suggestive of compartment syndrome and fasciotomy[1,2,6]. But, there are no published pressure guidelines for gluteal compartment[6].

Delayed diagnosis of AGCS may result irrevocable sequelae; rhabdomyolysis, renal failure, shock, multiple organ failure, disseminated intravascular coagulation,

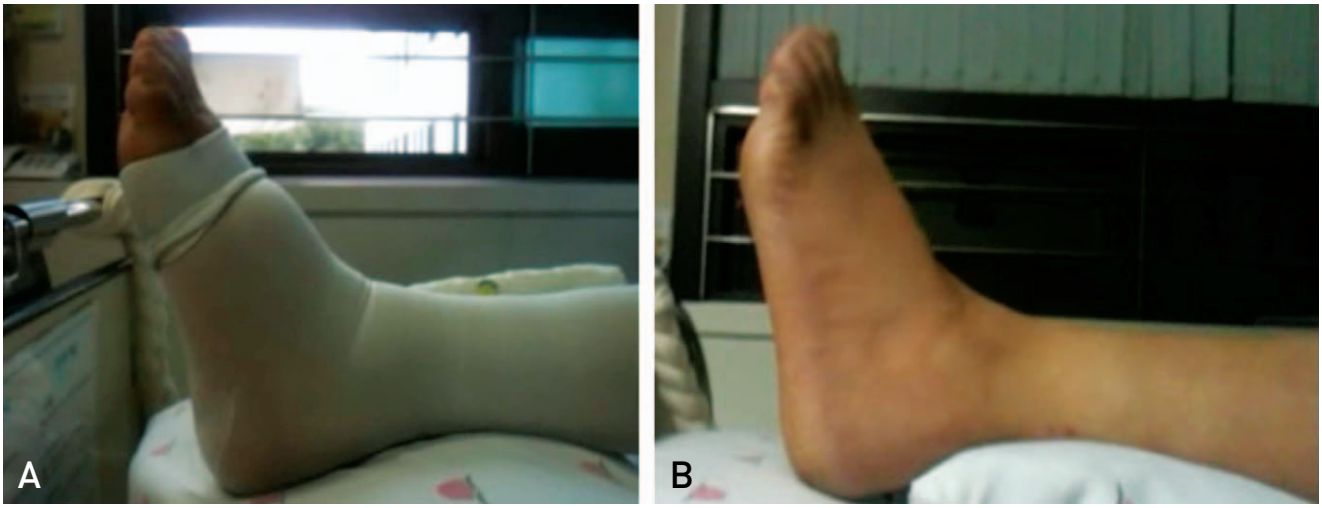

Fig. 4. (**A**) 2 Weeks after Postoperative day; flexion and extension of great toe,ankle was recovered patially (Grade 4), (**B**) 3 Weeks after Postoperative day; Motor function was nearly full recovered (Grade 4+).

progressive ischemic change of sciatic nerve and possibly death[6]. Patient monitoring and adequate hydration is required for early detection and management of rhabdomyolysis and renal failure[1].

In this case, rare incidence and no obvious risk factor, marked painful swelling of hand, preserved initial neurologic function led to delayed disgnosis of AGCS. Furthermore, differential diagnosis for spinal origin also caused delayed diagnosis.

Conclusion

We reported acute gluteal compartment syndrome simply following rolling down on stair. Rarely because Simple contusion of gluteal region can lead to AGCS and irrevocable sequelae, careful physical examination and consideration of AGCS are essential for early diagnosis and appropriate treatment.

Competing Interest: None to declare
Ethics approval: This study was conducted with the approval of the Konyang university Hospital, Korea

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