ANATOMY TEAM

LECTURE (18)

SCIATIC NERVE
OBJECTIVES

• At the end of the lecture the students should be able to:

* Describe the anatomy (origin, course & distribution) of the sciatic nerve.

* List the branches of the sciatic nerve.

* Describe briefly the main motor and sensory manifestations in case of injury of the sciatic nerve or its main branches.

تنويه / هذا العمل لا يعتبر مصدر أساسي للمذاكره وإنما هو للمراجعه فقط ،

"يوجد بعض الفروقات بين سلاید الأولاد و البنات ننصح كلا الطرفين

* تحميل النسختين (نسخة البنات+نسخة الأولاد) "
ORIGIN of sciatic nerve:
From Sacral Plexus which are , (L4-L5), (S1-S2-S3).

Formation:
Ventral (anterior) rami of a part of L4 & whole L5 + S1,2,3 and most of S4.

COURSE Sciatic Nerve:

- Ventral (anterior) rami(L4-L5), (S1-S2-S3).

  - On the posterior wall of the pelvis which seen in front of Piriformis. •
  - Leaves the pelvis through Greater Sciatic foramen, BELOW the Piriformis. •
  - It passes in the gluteal region midway between: (ischial tuberosity & Greater trochanter).

In the pelvis

- go to posterior compartment of the thigh. •
  - It descends on the posterior aspect of Adductor Magnus which overlapped by (Biceps femoris & Semimembranosus)

In the thigh.

- It is divides into: 1-Tibial nerve 2- Common peroneal nerve •
**Tibial nerve of Course**

- It descends through the popliteal fossa (bisect the fossa)
- Posterior compartment of leg, accompanied with posterior tibial vessels
- Passes deep to the flexor retinaculum (through the tarsal tunnel, behind medial malleolus)
- It reaches the sole of foot where it divides into two terminal branches:
  1. Medial planter nerves
  2. Lateral planter nerve

**COURSE COMMON PERONEAL NERVE:**

- Leaves popliteal fossa through its lateral angle and turns around the lateral aspect of the neck of fibula
- Then divides into two nerves:
  1. Superficial peroneal to supply the Lateral compartment of the leg.
  2. Deep peroneal to supply the Anterior compartment of the leg.
Some important Notes

1- It is the largest nerve of the body.

2- It is the largest branch of the plexus.

3- Lumbosacral trunk is contain (L4-L5).

4- The sciatic nerve divided into two branches:
   a. Tibial or (Medial popliteal).
   b. Common peroneal nerves or (Latral popliteal) or (Fibular nerve).

5- Branches of the sciatic nerve cutaneous enervation All leg and foot except medial site of leg and medial site of the are supplied by the Saphenous nerve which (branch of Femoral nerve).

6- Medial site of big toe supplied by one of the branches of the sciatic nerve called common fibular nerve.

7- The sciatic nerve usually supplies no structures in the gluteal region.

8- The short head of biceps receives its branch from the lateral popliteal nerve (fibular nerve).

9- Sciatic nerve branches (Tibial part) are supply hamstring part, Adductor Magnus, long head of Biceps Femoris, Semitendinosus and Semimembranosus.

10- The causes of sciatic nerve injury are:
   A- Badly placed intramuscular injection.
   B- Posterior dislocation of hip joint.
   C- Fracture pelvis.
11- The best region for intramuscular injection is the Gluteal region and the safest place to inject is the upper outer quadrant.

12-foot drop happens if the sciatic nerve or the common peroneal nerve are injured.

13-in case the injury is in the sciatic nerve, we call the patient’s walk (stamping gate)

14-lesion in tibial nerve causes dorsiflexed foot and everted (Calcaneovalgus)

15-if there is a lesion in common peroneal nerve: Foot drop loss of dorsiflexion and eversion (Calcaneovarus)

16- if there is a lesion in the femoral nerve: loss of extension of the knee joint
NOTES SAID BY THE DOCTOR:

1- **S4** is not considered as a sciatic nerve, it will join the sacrococcygeal nerve. 

2- Sciatic nerve is covered by the *bicips* muscle.

3- Tibial nerve will divide into 2 branches in the sole of the foot.

4- All the muscles in the sole of the foot are *INTRINSIC*.

5- All the muscles in the back of the leg are *FLEXORS*, while the anterior are *EXTENSORS*.

6- Neck of fibula is not covered by any muscles and the peroneal nerve go through it. That’s why it is dangerous to have an injury in it.

7- Anterior tibial nerve called by that name because there is an artery beside it with the same name.

8- **Upper quadrant of the buttocks** is good for injection because it is away from the sciatic nerve.

9- Sciatic nerve is behind the hip immediately.

10- Foot drop = planterflexion.

11- Sciatica (3rd elnessa) starts as a sensory then it effect the motor nerves.

12- Most common place to get injured is **L5 & S1 OR L4 & L5**.

13- If there is a fracture in the neck of fibula, antagonist muscle will work. (Planterflexion and flexion of the toe), in case of peroneal nerve is injured.
14- what’s the difference between foot drop in case of peroneal and sciatic nerve?

**Sciatic:** all the flexor muscles are paralyzed (it drop cuz of the body weight and gravity)

**Peroneal:** only the muscles of anterior are paralyzed

15- tibial nerve is rarely injured because it is covered by muscles

16-common poreneal will not supply the sole of foot it will supply the dorsum (3ks el tibial nerve)

17- if there is problems in the vertebrae column and it compressed the sciatic nerve, this condition is called **sciatica**, and it will result in severe pain.

**Useful links and videos: =)**

**Summary of the nerves of lower limb**


[http://www.youtube.com/watch?v=gBX_X2jE7O](http://www.youtube.com/watch?v=gBX_X2jE7O)
Quick Review

**Q1. What is the origin of sciatic nerve?**

From Sacral Plexus, (L4,L5), (S1, S2,S3).

**Q2. What is the site formation of sciatic nerve?**

Ventral (anterior) rami of a part of L4 & whole L5 + S1,S2,S3 and most of S4.

**Q3. What is the lumbosacral trunk?**

Assemblage of L4 and L5.

**Q4. what are the main features of sciatic nerve ?**

It is the largest nerve of the body.

& largest branch of the plexus.

**Q6. What are the other name of common peroneal nerves?**

Latral popliteal nerve.

FIBULAR nerve.

**Q7. why the lateral aspect of neck of fibula is very dangerous position ?**

Because it is an exposed position.

**Q8. What is the nerve that supply medial site of leg and medial site of the foot ?**

Saphenous nerve
Q9. What is the nerve that supply Anterior compartment of the leg?

Common fibular nerve "branch from sciatic nerve"

Q10. What are the muscles which supplied by tipial nerve?

Hamstring part of Adductor Magnus.

Long head of Biceps Femoris.

Semitendinosus.

Semimembranosus.

Q.11 what is the muscle that supplied by fibular nerve?

The short head of biceps of femoris.

Q12. What are the main causes of the sciatic nerve injury?

A- Badly placed intramuscular injection

B- Posterior dislocation of hip joint.

C- Fracture pelvis.

Q13. What is the safest place to inject in GLUTEAL REGION?

The upper outer quadrant of either gluteal region.
Q14. What is the motor effects occur when Sciatic nerve injured? 

The hamstring muscles are paralyzed, but weak flexion of the knee is possible (weakness). Also, all the muscles below the knee are paralyzed, and the weight of the foot causes it to drop (planter flexed position).

Q15. What is the sensory effects occur when Sciatic nerve injured? 

Sensory effects: Loss of sensation of the areas supplied by sciatic nerve below knee EXCEPT for a narrow area down the medial side of the lower part of the leg.

Q16. Why there is a weak flexion of the knee and weak extension of the hip if the Sciatic nerve injured?

Because of the action of the sartorius (femoral nerve) and gracilis (obturator nerve) in knee flexion and gluteus maximus (Inferior gluteal nerve) in hip extion.

Q17. What are the causes of Common peroneal nerve injury?

1- Fracture neck of fibula
2- Pressure from a cast or splint
Q18. What are the EFFECTs OF INJURY OF COMMON PERONEAL NERVE?
Paralysis of muscles of:
- Anterior & Lateral compartments of the leg.
Movements affected: Loss of:
1. Dorsiflexion of ankle.
2. Eversion of the foot.
3. Extension of the toes.
So, Foot is Planter flexed & Inverted.

Q19. What are the EFFECTS OF INJURY OF TIBIAL NERVE?
Paralysis of muscles of the: Posterior compartment of leg
Muscles of the sole of the foot
*Movements affected:
1. Planter Flexion of ankle
2. Inversion of foot
3. Flexion of toes
So, Foot is Dorsiflexed&Everted

Q20. Which one of the following structure pass behind the medial malleolus?
Tibial Nerve

Q19. Why if the Sciatic nerve injured the foot is dropped “Planter---flexed” ?
While all the muscles blow the knee is paralyzed so no muscle will work in the foot as a result of that the gravity will pull the foot Downward.

Q20. What is other name of tibial nerve?
Medial popliteal
QUIZ:

1. Paralysis of which of the following would make an individual unable to flex the knee?
   a. hamstring muscles.
   b. gluteal muscles.
   c. brachioradialis.
   d. soleus.

2. Which is wrong regarding the gluteal region?
   a. Its deep fascia is continuous with the tensor fascia lata of thigh.
   b. Sacrotuberous ligament is attached to ischial tuberosity.
   c. Piriformis is the lateral rotator of thigh at hip joint.
   d. Gluteus maximus is innervated by sciatic nerve.

3. Popliteal fossa contains:
   a. Great saphenous vein.
   b. Posterior tibial artery.
   c. Tibial nerve.
   d. Deep peroneal nerve.

4. The nerve is affected by Fracture of the neck of fibula?
   a. saphanous nerve
   b. common preanal nerve
   c. Axillary nerve
   d. Femoral nerve

5. Which nerve supply Anterior compartment of the leg?
   a. Deep peroneal nerve
   b. Tibial nerve.
   c. Common peroneal nerve
   d. Saphenous nerve

6. Select the INCORRECT statement about the sciatic nerve:
   a. It is the largest nerve in the body
   b. It is a terminal branch of the sacral plexus
   c. Its root values S1,2,3
   d. It leaves the pelvis inferior to the piriformis
7- The injury of sciatic nerve leads to:

b. Completely loss of Flexion of hip
C. completely loss of Extension of knee
d. . Completely loss of Flexion of knee

8- A child was riding a motor-bicycle, then he fall and there was fracture of the fibular neck, what will be affected:

a. Common peroneal nerve.
b. Tibial nerve.
c. deep peroneal nerve
d. Saphenous nerve

9- Fracture of fibular neck leads to (injury to common peroneal nerve) leads to:

a. Loss of inversion
b. Drop foot
c. loss of all movements

10- Taleps calcaneovalgus due to an injury of which nerve:

a. Tibial nerve
b. common peroneal nerve
c. Superior Gluteal Nerve
d. Nerve To Obturator internus

11- Which one of the following structure pass Behind the medial malleolus?

a. Tibial Nerve
b. Common peroneal (fibular) nerve
c. Saphenous nerve
12- Talipes equinovarus due to an injury of which nerve:

a. Common peroneal (fibular) nerve  
b. Tibial Nerve  
c. femoral nerve

13- Talipes Calcaneovalgus occurs when the foot is:

a. Planter flexed & Inverted  
b. Dorsiflexed & Everted  
c. Only Everted  
d. Only Planter flexed

14- The sciatic nerve descends on the posterior aspect of:

a. Semitendinosus  
b. Adductor Magnus  
c. Sartorius  
d. Psoas major

15- the sciatic nerve divides at the:

A. the lower of front of the thigh  
B. the upper of back of the thigh  
C. the middle of front of the thigh  
D. the middle of back of the thigh

16- When the sciatic nerve injury occurs, one of the manifestations is:

A. all muscles of the leg wasted  
B. all muscles of the foot wasted  
C. all muscles of the foot & leg wasted  
D. no muscles wasted
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GOOD LUCK ;)