Section: Miscellaneous

Original Research Article

A STUDY ON THE MEDIAN NERVE VARIATIONS IN ITS FORMATION

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ABSTRACT

Background: The median nerve is usually made up of the lateral root and another root that joins with it. The roots go around the third part of the axillary artery and then come together right in front of or to the front and side of the axillary artery, below the pectoralis minor.

Materials and Methods: The purpose of this study is to look back at colonoscopies that were done at ACSR Government Medical College and GGH, Nellore, Andhra Pradesh, India. People were sent to the hospital for a variety of reasons, including anemia, weight loss, stomach pain, gastrointestinal bleeding, and screenings for colon cancer. The tumors were categorized by their size, histology, and where they were located in the body. In this study, 120 cases were used, with 60 men and 60 women respectively.

Results: We saw several different ways that the median nerve formed. For the men who took part, 25% of the time, the median nerve was made up of three roots. In particular, the third root came from the musculocutaneous nerve 8.93% of the time and the lateral cord of the brachial plexus 25% of the time. Twenty-four percent of the female cases had three bases. In this group, 14.28% had a root that came from the lateral cord of the brachial plexus and 7.14% had a root that came from the musculocutaneous nerve. It was found that 5.36% of cases involving men had four roots and 7.14% of cases involving women did. Only 11% of cases showed the development of the median nerve in the arm, but 26% showed the development of the nerve next to or in front of the axillary artery in the axilla.

Conclusion: Anatomists and doctors should both know about the different ways the median nerve is formed. In addition, it helps and is helpful for a number of surgical procedures done in the axilla area.

Keywords: Variation development, course, and distribution of the median nerve.

INTRODUCTION

The structure of where peripheral nerves go and how they grow can be different. To correctly diagnose nerve injuries and keep them from getting hurt during limb surgeries, it is important to know about these differences in clinical practice.[1-3] There are many different ways that the median nerve can come from, join to other nerves, and spread out. A lot of research has been done on the abnormal pathways of the median nerve in the arm and armpit.[2-4]

However, there have only been a few studies that look at the differences in median nerve development and how they relate to the arteries in the arm and axilla. The main goals of this study were to find out what kinds of anatomical changes happened in the creation of the median nerve and where it is in relation to the brachial or axillary arteries.[3-5] The roots go around the third part of the axillary artery and then come together right in front of or to the front and side of the axillary artery, below the pectoralis minor. The median nerve trunk then forms and goes down into the axillary fossa, which is on the outside of the axillary artery.[4-6]

Along the upper arm, the median nerve is next to the brachial artery and in the same place as the underarm

artery. The median nerve goes through the brachial artery in front of it and lies on the inside of the cubital fossa, in the middle of the arm, near where the coracobrachialis muscle joins.[5-7] The structures and irregularities of the different nerves in the upper limbs have been written about in great detail by many writers. In this study, we show different ways that the median nerve could be twisted that were seen during normal surgery sessions. Clarifying the morphological and clinical value of the median nerve would help people understand it better by shedding light on the differences between its parts.[6-8]

The point of this study was to look at the different ways the median nerve has grown and how it connects to the brachial artery at the cubital fossa and the underarm artery in the axilla.

MATERIALS AND METHODS

This study investigates the retrospective analysis of colonoscopies conducted at ACSR Government Medical College and GGH, Nellore, Andhra Pradesh, India between March 2023 to February 2024. Patients were referred to the hospital for various causes, such as anemia, weight loss, abdominal pain, gastrointestinal bleeding, and colon cancer screening. The polyps were characterized based on their size, histology, and anatomical distribution. A total of 120 patients, consisting of 60 males and 60 women, were included in this study.

RESULTS

A large-scale study of the sliced brachial plexus was done to look at how the median nerve developed in the upper limbs of 84 dead male and female subjects. Roots of people of both sexes were found. 25% of the time, three roots were found in guys. It was found that the third root went back to the musculocutaneous nerve 8.93% of the time and to the lateral cord of the brachial plexus 16.07% of the time. Twenty-four percent of the female cases had three bases. In these cases, the third root was found to be connected to the musculocutaneous nerve 7.14 percent of the time and to the lateral cord of the brachial plexus 14.28% of the time. Sixty cases of men and sixty cases of women each had four different roots, as shown in [Table 1].

Table 1: Median nerve development differences between men and women

Gender	Two Roots	Three Roots	Four Roots	Total
Male	15	10	15	60
	20			
Female	12	17	13	60
	18			

[Table 2] shows that there was no statistically significant disparity in the frequency of median nerve formation by two, three, or four roots between male and female specimens.

Table 2: Comparison of male and female median nerve formation.

Gender	Two Roots	Three Roots	Four Roots	Total
Males	39	14	3	55
Females	20	25	20	65
Total	59	39	23	120

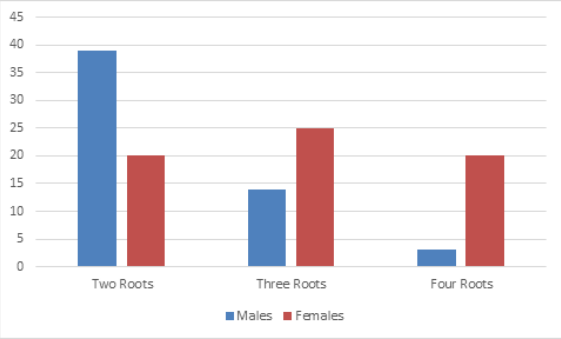

Figure 1: Comparison of male and female median nerve formation

About 5.12% of female cadavers and 9.25% of male cadavers have the median nerve form at the arm level. There was evidence of this in the armpit on the side of the third part of the axillary artery in 80.95% of cases. Men were involved in 41.67% of cases and women in 39.28%. In 66 of the cases, the growth happened in front of the third section of the axillary artery. Fourteen of these people were men and one in eleven were women [Table 3].

Table 3: Median nerve-brachial artery course in the cubital fossa

Sr. No.	The course of nerve	Number
1	Medial	66
2	Lateral	54
Total		120

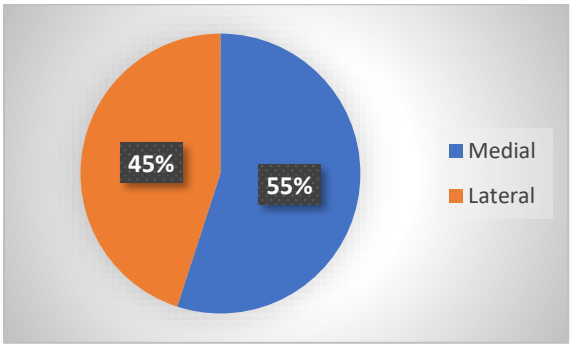

Figure 2: Median nerve-brachial artery courses in the cubital fossa

In two upper limbs—one from a man and one from a female cadaver—we found a strange connection between the musculocutaneous nerve and the median nerve in the middle and lower arm. We found that the median nerve and the brachial artery were not in the normal place in one upper arm of a dead woman. For more specifics, the median nerve was placed next to the brachial artery at the level of the cubital fossa.

DISCUSSION

In this study, colonoscopic polypectomies were done on a total of 120 people, 60 men and 60 women. A lot of writers have written a lot about the shapes and abnormalities of nerves in the upper limb all over the world. Through the appearance of three or four roots, we saw different abnormal patterns in the development of the median nerve in this study. Researchers found that the lateral cord or the musculocutaneous nerve helped make the median nerve by giving it more roots. People might get nerve block anesthesia and surgical treatments mixed up because the median nerve comes from an odd place. According to the posterior chord of the brachial plexus, the extra roots that helped make the median nerve were stimulated. It was found that three roots helped form the median nerve in 25% of cases involving men and 21.42% of cases involving women in the upper limbs.[9-11]

In 5.14 percent of cases involving women and 5.36 percent of cases involving men, the presence of four roots helped form the median nerve. 5% of the time, 3.57% of the time, 2% of the time, and 4.5% of the time in another experiment, the median nerve grew by four roots. 5% of the time, the musculocutaneous nerve was not present. The muscles in the front of the arm did not get any supply when the median nerve was not there.[10-12]

Based on our results, the median nerve grew in the arm 11.91% of the time and in the axilla 88.09% of the time. Eighteen percent of these cases involved dead men and five percent involved dead women. 68.33% of the time, the median nerve in the arm came from the union of two roots. 13.33% of the time, it came from the upper third, and 6.67% of the time, it came from the middle third.[11-13] It was also shown that the median nerve was made when the three roots came together in 8.33% of cases in the axilla and in 3.33% of cases in the upper third. On its side, the median nerve usually runs next to the underarm artery. There is an axillary artery that links the middle root of the nerve to the lateral root. The median nerve was found to be in front of the third segment of the axillary artery 4.76 percent of the time, but it was only found to be behind the third segment about 2.38 percent of the time. This happens 20% of the time, and only 3.33 % of the time is it medial to the third section of the axillary artery.[14-16]

The median nerve was found medially to the axillary artery in 13.6% of cases in the left upper limb and posterior to it in 4.5% of cases. The median nerve on the right side was found to go medially to the underarm artery 13.6% of the time and posteriorly to it 4.5% of the time.[17-19] A study of 344 axillae also found that the median nerve was located medially to the underarm artery 4.7% of the time. It is important for doctors to know the difference between these terms, especially when it comes to peripheral nerve regrowth and evaluating people who have been hurt. In 2.38% of people, we saw more touch between the musculocutaneous nerve and the median nerve.[20-22]

There is an extra connection between the musculocutaneous nerve and the median nerve 3.3% of the time. Eleven percent of the time, these two nerves were seen to be communicating with each other. Thirteen percent of the time, they were found to be connected in a way that wasn't normal. It was seen that the musculocutaneous nerve and the median nerve on the right side did not join properly 13.6% of the time. Also, the ulnar nerve and the median nerve on the right side were connected in a wrong way 4.5% of the time.[21-24]

CONCLUSION

One in four people in our group has a variation in their median nerve. Radiologists, doctors, and anatomists are all interested in them. Understanding the differences in the nerves in the upper limb is important for routine surgeries, checking up on people who have been seriously hurt, major neck surgeries, and fixing peripheral nerves. These events make it more likely that medical help will hurt someone without meaning to. Having this knowledge can help you avoid getting hurt during surgeries and cosmetic treatments that are done near the arm and axilla. These differences can help you figure out what's causing symptoms that might not be directly caused by nerve compression.

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