## Summary and Conclusion

The study on brachial and lumbo-sacral plexuses were done on three Macacus irus. Besides detail description, the result was compared with studies on other primates including man as can be found in the literature available in this country.

The study on brachial plexus followed the conventional plan of dividing the plexus into roots, trunks, divisions and cords. Measurement were made on various parts of the plexus as no attempt has been done before. No definite conclusion can be drawn as the number of animals used were too small, anyhow the data was summaried in table 1-4. The length of the roots varies between 0.9 cm to 1.9 cm, root of C 8 seem to be the longest and C 6 the shortest. The length of the trunk varies between 0.3 to 1.3 cm, the upper trunk is the shortest, as there is no separation between root of C 7 and middle trunk, the length of the two were measured together. The length of the divisions varies a good deal from 0.2 cm to 3.0 cm. The anterior division is longer than the posterior. The cords varies also from 0.4 cm to 2.2 cm, only two cords were measured, the lateral and posterior, the former is longer than the latter. Variation in the formation of upper trunk was found only in one extremity (Animal 1-left), there was no union of the fifth and sixth cervical nerves to form the upper trunk. Same variation could be found in man and other primates.

Branches from roots supply Mm Scalene, Longus Colli, Rhomboid, Serratus Anterior and a supplementary branch to the phrenic nerve,

there are slight variation in their origin and composition. The supplementary branch to the phrenic nerve usually arises from the fifth cervical nerve close to where the nerve received twig from the cervical plexus, but it may be represented by twig from nerves to M. Subclavius.

From the trunk arises only one nerve-the suprascapular nerve from the upper trunk (C 5 and C 6). In one extremity (Animal 1-left), the nerve derives its fibers only from C 5.

From the divisions arise nerves to M. Subclavius and lateral pectoral nerve. Nerve to-M. Subclavius may be one or two branches, one from anterior division of upper trunk and another from anterior division of middle trunk.

Most of the branches of this plexus arise from the cords and supplies the pectoral region, arm, forearm and hand. They are medial pectoral nerve, this nerve unites with the lateral pectoral nerve to form loop deep to M. Pectoralis Minor in 4 extemities. The lateral cord gives rise to 2 branches, the musculo-cutaneous nerve and the lateral head of the median nerve. In this animal the musculo-cutaneous nerve receives communicating branch from the median nerve before ending as lateral cutaneous nerve of the forearm. The nerves take its fibers from the fifth, sixth and seventh cervical nerves.

Branches from the posterior cord comprises subscapular nerves which vary in number from two to four, the nerve may arise

just distal to the suprascapular nerve or arise directly from the parts of the fifth and sixth cervical nerves going to form the posterior cord. The lower one or two branches of these nerves may take origin in common with the proximal part of the circumflex nerve. Next branch is the circumflex nerve which has its origin from the fifth and sixth cervical nerves, none from the seventh cervical nerve as found in post-fixed type of the plexus of man. The continuation of the posterior cord is the radial nerve. In Macacus irus the nerve takes origin from all the nerves forming this plexus but it is not definite in Macaca mulata (Howell and Straus 1933). The same condition is found in man, there is some doubt about fibers from C 5 entering into the formation of the nerve and the first thoracic nerve is denied in some textbooks. Another branch is the nerve to M. Latissimus Dorsi which takes origin from the back of the cord in 2 extremities of animal 3 the nerves arise from the divisions before forming the posterior cord.

The medial cord gives rise to medial cutaneous nerve of arm and forearm. In 4 extremities the two nerves combine into a common trunk and in 2 extremities they separates into medial cutaneous nerve of arm and medial cutaneous nerve of forearm. In single trunk the nerve may arise proximal to the origin of ulnar nerve or in common with the ulnar nerve (Animal 2-left). When the nerves are separated, the medial cutaneous nerve of forearm takes origin from the medial cord and the medial cutaneous nerve of arm is the continuation of the intercosto-brachial nerve.

Ulnar nerve shows no variation in Macacus irus, it takes origin from the medial cord before the latter is joined by C 7, but there is considerable variation of origin among other primates, in all except Chimpanzee, the nerve leaving the inner cord after the latter had received a branch from C 7. In Proboscis Monkey the nerve arises only from Th 1. (Harris 1939).

Median nerve in Macacus irus and in most of the primates takes origin from all the lower cervical and first thoracic nerves. In Lemur & Wooly Monkey there are no fibres from C 5. Contribution from C 5 in post-fixed type of plexus is also questioned in man.

The lumbo-sacral plexus in Macacus irus is formed by seven lumbar spinal nerves and first sacral nerve and differs from that of Macaca mulata, the latter has also fibres from second sacral nerve. In animal 1-left a branch from the subcostal nerve joins the upper part of the plexus. Man shows more variation according to the pre-or post-fixed types of the plexus. So Th 11 or S 4 may form part of the plexus.

Six nerves arise from the upper five lumbar spinal nerves, the first lumbar nerve gives rise to the ilio-hypogastric and part of ilio-inguinal nerves. The second lumbar gives rise mainly to the ilio-inguinal and genitofemoral nerves and a branch to join the third lumbar nerve. The third lumbar gives fibers to the lateral cutaneous of thigh and some fibers to join the fourth lumbar nerve to form the femoral and obturator nerves and also to the lateral cutaneous nerve of thigh. The fifth lumbar has its main part descends

to join with roots of the sixth lumbar nerve and contributed also partly to form the femoral and obturator nerves.

The lower part of the lumbosacral plexus gives rise to nerves supplying the gluteal and pudendal region, only one nerve- the pudendal could be found to arise in the pelvic cavity, the others necessitated the dissection into the gluteal region. Nerves to muscles of the gluteal region which are nerve to Piriformis, superior gluteal nerve, N. to Gemelli, N. to Quadratus Femoris and N. to Obturator Internus vary in different animals so the term nerve pubo-ischio femoralis as used by Howell and Straus (1933) in Macaca mulata cannot be used for Macacus irus. The superior gluteal nerve of Macacus irus resembles the inferior branch of superior gluteal nerve of man. The sixth and seventh lumbar nerves give origin to N. to Piriformis. The superior and inferior gluteal nerves take origin from the fifth, sixth and seventh lumbar nerves only in 2 extremities (Animal 2-right and Animal 3-left) there are additional fibers from first sacral nerve. The same origin is found for N. to Obturator Internus and nerve to Gemelli, occasionally the fourth lumbar nerve may add fibers to the latter nerve.

The posterior cutaneous nerve of thigh and the pudendal nerve in Macacus irus take origin usually from the seventh lumbar nerve and first sacral nerve, only one extremity (Animal 2-left) the two nerves derive its fibers from the sixth lumbar nerve and not from the first sacral nerve.

Nerve to Hamstring muscles form single trunk as there is

no short head of M. Biceps in Macacus irus, the nerve takes origin from the fifth, sixth and seventh lumbar nerves. This nerve varies in Macaca mulata, it may arise from L 4, L 5 and L 6 or even as low as L 6, L 7 and S 1 (Howell and Straus 1933).

The sciatic nerve in Macacus irus forms a single trunk and shows no separation into lateral and medial popliteal nerves as found in Macaca mulata (Howell and Straus 1933). The two components could be traced to their origin from the fifth, sixth and seventh lumbar nerves, the medial popliteal has also additional origin from the first sacral nerve. The origin of these two nerves differ in man, the medial popliteal has its origin from L 4, L 5, S 1, S 2 and S 3 and the lateral popliteal nerve from L 4, L 5, S 1 and S 2. The sacral origin is the main component more than the lumbar origin but in Macacus irus the main component is the lumbar origin, the sacral origin has a minor part in the formation of these nerves. The condition makes the separation of this plexus into lumbar and sacral plexuses in macacus irus not so distinct as that found in man.