Macrodactyly - a case report

Arun Kumar S Bilodi  

Professor of Anatomy, Mahatma Gandhi Medical College & Research Institute, Pondicherry.

Abstract

A case of macrodactyly of thumb and index fingers in a female aged fourteen years is reported here. This subject was found to have abnormally large thumb and index fingers of her right hand. This case was also associated with suspected spina bifida occulta. Other fingers and toes were normal. This girl was a second child born to a consanguineous couple. The subject did not have any other anomaly. The macrodactyly of index as well as thumb in this case caused difficulty in carrying out day to day activities like writing, lifting heavy objects and also for using the hand to have food. Such cases may have some morphological and associated genetic importance.

Key Words: dactylomegaly, macrosomia, macrodystrophia, lipomatosa, digital anomalies, occult spina bifida, syndactyly.

Introduction

Macrodactyly is a common anomaly of hand. It is a local gigantism and also called as dactylomegaly, macrosomia, macrodystrophia, lipomatosa. This anomaly is characterized by increase in size of phalanges, tendons, vessels, nerves, subcutaneous fat of fingers, nails and skin, but size of metacarpals and metatarsals remain normal. It is reported to be more in males, but Kotwal and Farooque have reported a higher incidences in females as well. According to Kelikian, over 300 cases of macrodactyly of fingers have been described but only 60 involving toes have been reported.

Case Report

During routine survey of school children in Bangalore, a fourteen year old girl was found to have enlarged index finger and thumb of her right hand. (Fig. 1). She experienced difficulty in performing routine tasks like writing, lifting heavy weights and taking food due to enlarged index finger as well as thumb. She was the second daughter of the consanguineous parents. Her elder brother was normal. Except the history of cleft lip in her distant relative no other details could be elicited regarding drug intake by her mother during pregnancy, history of systemic diseases in the family, or bad obstetric history of the mother. Her right hand showed enlarged and thickened thumb and thickened index finger with dorsal concavity. (Fig. 1) There was also painless fullness at the tip of index finger but no congenital clubbing. Her middle, ring and little fingers were normal in size and shape. Sensation was intact in all her fingers. Movements of fingers were normal except flexion of distal inter phalangeal joint of index finger. There was minimal movement in this joint. Joints in other fingers were normal. Left upper limb was absolutely normal.

Discussion

The series studied by Kotwal and Farooque included 14 girls and nine boys seen at mean age of five years (1 to 18 years). The fingers were affected in seven and toes were affected in sixteen. All the affected fingers were in the territory of distribution of median nerve, but anomalies were not associated with particular nerve distribution. Enlargement of digits were more pronounced distally. Three patients also had syndactyly.
Fig. 1 shows Macrodactyly of Thumb and index fingers of right upper limb.

Follow up was done for nine years. They were treated for macrodactyly surgically. Two cases underwent amputation, and defatting surgery was done in 18 cases followed by shortening of fingers and also corrective osteotomy.

Static macrodactyly have larger toes (or toe) when they are born. The affected enlarged finger grows at the same rate as the other fingers. For example, if the enlarged finger is 20% larger than the other fingers, it will continue to be 20% larger than the other fingers as the child grows. Progressive macrodactyly usually starts out as a regular sized finger, but begins to grow in early childhood. The finger continues to grow larger than the other fingers.

In a study of 64 cases, Barsky² reported that macrodactyly is more commonly observed in males and in the foot especially the second digit.

**Development**

Upper limb bud appears by 26th or 27th day and lower limb bud appear after one or two days. These limb buds is made up of masses of mesenchyme overlapped by ectoderm. It is from the somatic layer of lateral mesoderm, this mesenchyme is derived. Later there is elongation of limb bud by proliferation of mesenchyme. In the early part of development, both upper and lower limb buds look similar. Later thickening of ectoderm at apex of each limb bud takes place and Apical Ectodermal Ridge is (AER) is formed. This AER promotes growth and development of limb buds. By 6th week of intra uterine life, there is condensation of mesenchyme in the hand plates to form digital rays. By further condensation of mesenchyme, final outline of fingers are formed. By the end of 8th week, separate digits are formed by breaking down of the inter digital tissues by Programmed cell death (Apoptosis) and mediated by Morphogenetic Proteins (BMP). Any blockage of both molecular and cellular events will give rise to anomalies of fingers like webbing of fingers or fusion of fingers like Syndactyly of toes or fingers. The most commonly involved fingers are the index finger followed by middle finger (long finger), ring & little fingers. It is more common in males than in females. The incidence of syndactyly is present in 10% of cases.

**Conclusion**

In the case presented here, there was macrodactyly of index and thumb in a female aged about 14 years. There were no syndactyly, but associated occulta spina bifida was present. Sensation was intact on both surfaces. This case report will give knowledge of abnormalities of digits to anatomists, general surgeons and to plastic surgeons for any surgical intervention for correction. Hence it has been reported.

**References**


Address for communication:
Dr. Arun Kumar S Bilodi
Professor of Anatomy
Mahatma Gandhi Medical College & Research Institute,
Pilliyarkuppam, Pondicherry - 602 407.
E-mail ID : drbilodi@yahoo.com
Mobile : 09994910570