Historical note: an analysis of a 17th century illustration of a child with split hand/split foot malformation

Avi Ohry · Moshe Frydman

Received: 30 November 2009 / Accepted: 21 December 2009 / Published online: 12 January 2010
© EPOS 2010

Abstract In one of Philipp Jakob Sachs von Lewenhaimb's (1627–1672) books, one may find perhaps the first illustration of a child with the split hand/split foot malformation. A short historical note and some clinical genetic data are given.

Keywords Split hand/split foot syndrome ·
History of medicine · 17th century ·
Philipp Jakob Sachs von Lewenhaimb

Garrison [1] called the 17th century “the age of individual scientific endeavor.” That was the age of Shakespeare, Milton, Velasquez, Rembrandt, Bach, Purcell, Cervantes, Moliere, Newton, Leibnitz, Bacon, Descartes, Spinoza and Locke. England, Holland and Italy contributed mostly to the advancement of medicine, i.e. Harvey, Leeuwenhoek, Malpighi, Redi, Sylvius, Willis and Sydenham.

Germany was torn and destroyed during the Thirty Years' War (1618–1648). The war was fought primarily in Germany and, at various points, involved most of the European countries.

The results of the war were devastating: it is estimated that the reduction of the population in the German

states was about 15–30% due to famine and infectious diseases. Castles, towns and villages were totally destroyed.

But, in spite of this background, “on the 1st January 1652, four physicians founded the Academia Naturae Curiosorum in the Free Imperial City of Schweinfurt. The Academy Statutes, which were first printed in Latin in 1662, comprise 18 articles. The purpose of the Academia is presented in a preamble: The glory of God, the enlightenment of the art of healing and the benefit resulting from this for our fellow men be the goal and the only guide of the Academy of Sciences” [2].

One of the founding members, Philipp Jakob Sachs von Lewenhaimb (1627–1672), published the first complete monograph which paved the way to the founding of the *Ephemeriden*, the world's first medico-scientific journal, in 1670. The journal was dedicated to Emperor Leopold I (1640–1705), who “guided the fortunes of the Holy Empire of German Nations for more than 40 years. He was well-known for his lively interest in the arts and sciences of his era.” In 1677, the emperor recognized the importance of the journal and the academy, and awarded the academy the title of “*Sacri Romani Imperii Academia Naturae Curiosorum*” (the Leopoldina).

Philipp Jakob Sachs, of Breslau, was a German physician, naturalist and, later, editor of *Ephemerides Academiae Naturae Curiosorum*, the first ever learned journal in the field of medicine and natural history.

In one of his books [3, 4], we can find an illustration of a child with the “split hand–split foot malformation (lobster claw), with normal right hand, left hand polydactyly, short middle metacarpal and split-feet.”

Perhaps the child also had some degree of abnormal abduction of the hip joints, short arms and a short neck (Fig. 1) [4].

A. Ohry (✉)
Section of Rehabilitation Medicine, Reuth Medical Center,
Tel Aviv, Israel
e-mail: aohry@bezeqint.net

M. Frydman
Danek Gertner Institute of Human Genetics,
Sheba Medical Center, Tel Hashomer, Israel

A. Ohry · M. Frydman
Sackler Faculty of Medicine, Tel Aviv University,
Tel Aviv, Israel

Fig. 1 Child with deformed feet from Ref. [4]

Ectrodactyly [5] (lobster claw syndrome or Karsch–Neugebauer syndrome) is a rare congenital absence deformity of the limbs primarily involving the middle rays of the hands and feet. This split gives the hands/feet the appearance of lobster claws. Split hand/split foot syndrome is genetically heterogeneous and can be caused by mutations in several genes [6, 7]. Association with mental retardation, facial clefts, ectodermal dysplasia and other anomalies were reported [8]. Three variants with long-bone deficiency were defined on the basis of genetic linkage studies and a two-gene model has been proposed by Naveed et al. [9]. The associated polydactyly seen in the picture may suggest a specific subtype reported by van Regemorter et al. in 1982 [10].

Autosomal dominant inheritance with irregular penetrance is common to most types, nevertheless, autosomal recessive and cross-linked variants were also suggested [8].

Finally, in the picture, we can see a broken tree, many years prior to Nicholas Andre's illustration...

References

1. Garrison FH (1929) An introduction to the history of medicine, 4th edn. WB Saunders, London, p 245
2. German Academy of Sciences Leopoldina (2007) History of the Leopoldina. Available online at: <http://www.leopoldina-halle.de/cms/en/academy/history.html>
3. Alder J (2006) The Stebbing collection. Available online at: <http://www.kcl.ac.uk/depsta/iss/library/speccoll/stebbing.html>
4. Sachse de Lewenheim PJ (1665) Gammarologia, sive, Gammarorum, vulgo cancrorum consideratio physico-philologico-historico-medico-chymica. Francofurti & Lipsiae, Esaiæ Fellgibelii [Stebbing Collection QL444. M3 SAC]
5. Ectrodactyly. Wikipedia entry at: <http://en.wikipedia.org/wiki/Ectrodactyly>
6. Zlotogora J (1994) On the inheritance of the split hand/split foot malformation. *Am J Med Genet* 53:29–32
7. Zlotogora J (1995) Heterogeneity of the autosomal dominant split hand/split foot malformation. *Am J Hum Genet* 56:341–343
8. Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University School of Medicine (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD). Home page at: <http://www.ncbi.nlm.nih.gov/omim>
9. Naveed M, Nath SK, Gaines M, Al-Ali MT, Al-Khaja N, Hutchings D, Golla J, Deutsch S, Bottani A, Antonarakis SE, Ratnamala U, Radhakrishna U (2007) Genomewide linkage scan for split-hand/foot malformation with long-bone deficiency in a large Arab family identifies two novel susceptibility loci on chromosomes 1q42.2-q43 and 6q14.1. *Am J Hum Genet* 80:105–111
10. van Regemorter N, Milaire J, Ramet J, Haumont D, Rodesch F (1982) Familial ectrodactyly and polydactyly: variable expressivity of one single gene—embryological considerations. *Clin Genet* 22:206–210