CASE REPORT

Case Report: Gollop-Wolfgang Complex in a 5 month old baby [version 2; peer review: 1 approved, 1 approved with reservations]

Ihtesham A. Qureshi, Rohit Kumar Gudepu, Ravikanth Chava, Sravya Emmani, Syed Husain Asghar, Mohtashim A. Qureshi, Nimmathota Arlappa

Division of Community Studies, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad, 500 007, India

First published: 23 Dec 2014, 3:315
https://doi.org/10.12688/f1000research.5889.1
Second version: 09 Feb 2015, 3:315
https://doi.org/10.12688/f1000research.5889.2
Latest published: 24 Feb 2015, 3:315
https://doi.org/10.12688/f1000research.5889.3

v2

Open Peer Review

Reviewer Status

Invited Reviewers
1
2
3

version 3
(revision)
24 Feb 2015
✔
report

version 2
(revision)
09 Feb 2015
✔

version 1
23 Dec 2014

1. Stephen Robertson, Dunedin School of Medicine, University of Otago, Dunedin, New Zealand

2. Nicole Philip, Assistance Publique - Hopitaux de Marseille, Marseille, France

3. Murat Bastepe, Massachusetts General Hospital, Boston, USA
Qing He, Massachusetts General Hospital, Boston, USA

Any reports and responses or comments on the article can be found at the end of the article.
Corresponding author: Nimmathota Arlappa (arlappan@yahoo.com)

Competing interests: No competing interests were disclosed.

Grant information: The author(s) declared that no grants were involved in supporting this work.

Copyright: © 2015 Qureshi IA et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Data associated with the article are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

How to cite this article: Qureshi IA, Gudepu RK, Chava R et al. Case Report: Gollop-Wolfgang Complex in a 5 month old baby [version 2; peer review: 1 approved, 1 approved with reservations] F1000Research 2015, 3:315
https://doi.org/10.12688/f1000research.5889.2

Introduction
Generalized disorders of cartilage and bone have been referred to as skeletal dysplasias and are associated with a generalized abnormality in the skeleton\(^1\). Gollop-Wolfgang Complex (GWC) is a rare congenital limb anomaly characterized by tibial aplasia, ipsilateral bifurcation of the thighbone and ectrodactyly\(^2\). Ectrodactyly involves the deficiency or absence of one or more central digits of the hand or foot and is also known as split hand/split foot malformation (SHFM). Very often, the anomalies of limbs, heart, digestive and urinary tracts and the lumbosacral vertebrae are also affected\(^3\).

In 1980, Gollop \textit{et al}. described the case two brothers with ectrodactyly and unilateral bifurcation of the femur, absence of both tibiae and monodactyly of the feet\(^4\). In 1984, Wolfgang reported a case of right femoral bifurcation and absence of tibia and bilateral central defects of the hand\(^5\). Lurie and Ilyina (1986) proposed the eponym GWC for the combination of femoral bifurcation with hand ectrodactyly\(^6\). Endo \textit{et al}. found a total of 12 reported cases and added the case of a Japanese girl with a unique form of this malformation complex. Both hands and feet were involved and the involvement was bilateral\(^7\). The etiology of GWC is most likely an error in the complex genetic control of limb development but the exact cause is still unclear\(^8\). GWC is listed as a “rare disease” by the United States Office of Rare Diseases [ORD] of the National Institute of Health [NIH] and the approximate incidence is 1 in 1000,000\(^9\).

Case presentation
A 5-month old male Indian child with normal karyotype (46 XY) born to a 26-year-old primigravida, full term by C-section, presented with limb deformities associated with bilateral ectrodactyly of feet (Figure 1 and Figure 2), syndactyly of right hand (Figure 3) and ectrodactyly of left hand (Figure 4). At the medial distal third of the right femur, a large protrusion was present (Figure 1 and Figure 5). Radiographic images showed bifid femur with fibular agenesis (Figure 6), absence of right 3, 4, 5 metatarsals and phalanges, absence of left 4, 5 metatarsals and phalanges of foot (Figure 7), left lateral X-ray showing caudal (sacroccocygeal) agenesis (Figure 8). Initial diagnosis was made when the parents brought the child to the out-patient department concerned about limb abnormality at the age of 3 months and the final diagnosis was made following admission to the in-patient unit at 5 months, based on both clinical presentation and radiological images. There was no detailed prenatal history available.

The parents had documented second degree consanguinity but both did not have any significant family history. Similarly, there was no history of exposure to radiation, prenatal teratogenic medications and infections during pregnancy. The mother did not smoke or drink...
during pregnancy. The child was breast-fed with good appetite and cry, without any bowel bladder problems, change in skin color or any cleft lip/palate. Echocardiography at the time of admittance revealed no congenital heart defects. The ultrasonography of abdomen and pelvis revealed no visceral or renal abnormalities. Surgical reconstruction treatment was advised but the parents did not give consent for treatment.

Discussion

One case was reported of an Arab Muslim couple who came from a region where other consanguineous families with similarly affected individuals had been reported Kohn et al. in 1989, and the autosomal recessive inheritance seemed evident in the case of a child described by Raas-Rothschild et al. in 1999. In this case, we report a typical presentation of GWC with bilateral fibular agenesis and sacrococcygeal agenesis along with pathognomonic features of GWC (bifurcation of femur, syndactyly and ectrodactyly). There were no associated abnormalities like cleft lip/palate, tibial agenesis, visceral or cardiac anomalies seen in this patient. There is one documented case reported with distal femoral duplication with fibular agenesis. The best treatment option for this patient with GWC
is early knee disarticulation and resection of the protruded bifurcated femur, followed by fitting of a modern prosthesis. This treatment was discussed with the parents of the patient at three months of age and a follow-up visit was scheduled after two months.

This type of skeletal dysplasia with limb deficiencies could be the result of spontaneous gene mutations and chronic exposure to a toxic substance or infectious agents that results in the disruption of normal skeletal development. History of consanguinity is strongly associated with the developments of congenital anomalies among the newborn babies; there should be pre-marital genetic counseling to evaluate any impending congenital abnormalities. Similarly, antenatal check-ups are appropriate for early detection of congenital anomalies through proper screening.

Consent
Informed written consent for publication of images and clinical details was obtained from the patient’s parents.

Author contributions
NA, IQ, MQ, RG have performed literature review and manuscript writing. RC helped to make the diagnosis. SA, SE helped in revision of the manuscript. All the authors approved the final version of the manuscript.

Competing interests
No competing interests were disclosed.

Grant information
The author(s) declared that no grants were involved in supporting this work.

Acknowledgements
The authors like to acknowledge the contribution of Dr. M. Bharti, Professor at the Department of Radio-diagnosis, Navodaya Medical College, India.

References

Open Peer Review

Current Peer Review Status:  

Version 2

Reviewer Report 13 February 2015

https://doi.org/10.5256/f1000research.6552.r7661

© 2015 Philip N. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Nicole Philip
Département de Génétique Médicale et de Biologie Cellulaire, Assistance Publique - Hopitaux de Marseille, Marseille, France

I fully agree with the first reviewers's comments.

This paper deserves indexing as it is a very rare disorder. However, the following sentence (in the discussion) should be deleted:

"This type of skeletal dysplasia with limb deficiencies could be the result of spontaneous gene mutations and chronic exposure to a toxic substance or infectious agents that results in the disruption of normal skeletal development."

The main conclusion of this report should be that the occurrence of Gollop-Wolfgang in a consanguineous family brings further arguments to support autosomal recessive inheritance.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 27 January 2015

https://doi.org/10.5256/f1000research.6291.r7449

© 2015 Robertson S. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
Stephen Robertson  
Department of Genetics, Dunedin School of Medicine, University of Otago, Dunedin, New Zealand

This report describes a child with a typical presentation of Wolfgang-Gollop complex. The etiology of this condition is still in doubt although some familial recurrences suggest a genetic cause. The statement in the abstract that a spontaneous mutation is possible owing to parental consanguinity does not make sense and should be deleted. In this discussion there is also a suggestion that consanguineous unions should somehow be discouraged. This is inappropriate and a breach of reproductive autonomy. Such a statement should be removed. Consanguinity is not the strong risk factor for congenital anomalies as the authors imply, conferring approximately a 2 fold enhanced risk of such problems. This assertion needs to be rebalanced.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 02 Feb 2015
aatif qureshi,

Really appreciate your comments Dr. Stephen Robertson. I would like to hear back about my newer version of the paper.

Competing Interests: No competing interests were disclosed.

The benefits of publishing with F1000Research:

• Your article is published within days, with no editorial bias
• You can publish traditional articles, null/negative results, case reports, data notes and more
• The peer review process is transparent and collaborative
• Your article is indexed in PubMed after passing peer review
• Dedicated customer support at every stage

For pre-submission enquiries, contact research@f1000.com