PARTIAL TRISOMY 8q RESULTING FROM MATERNAL TRANSLOCATION t(2;8)(q373;q23)

P.L. GIORGI (1), E. TARANTINO (1), ADRIANA FORMICA (1), P. CIPRIANI (2), B. DALLAPICCOLA (3)

(1) Pediatric Clinic, University of Pisa, Italy
(2) Institute of Child Neuropsychiatry, University of Pisa, Italy
(3) Department of Medical Genetics, University of Rome, Italy

A patient with multiple congenital malformations due to partial 8q trisomy is reported. Karyotype-phenotype correlations suggest the possibility that partial trisomy 8q is a nosologically distinct syndrome.

INTRODUCTION

Several cases with phenotypical anomalies due to chromosome 8 umbalances have been reported (review in Dallapiccola and Forabosco 1978), but only a few of them deal with the condition of partial trisomy 8q.

Karyotype-phenotype correlations in cases of duplication of the long arm of chromosome 8 have suggested the existence of a clinically recognizable condition associated with this chromosome aneuploidy (Rethoré et al. 1977, Schinzel 1977). However, this conclusion has not been universally accepted (Riccardi and Crandall 1978).

We report a new observation of partial 8q trisomy due to a maternal balanced translocation 2q/8q.

CASE REPORT

F.G. is a girl, the first child of healthy parents. Pregnancy was uneventful; delivery, however, was difficult, and required extraction. Cyanosis developed immediately, and continued for two days after.

Birth weight, 2760 g. The father was 26 and the mother 24 at the time of birth. No relatives are known to have significant congenital defects.

The proposita was seen by us at the age of 5½ years. Weight and height were between the 3rd and the 10th percentile. The following clinical features were found (Fig. 1): flat facies, prominent forehead, upward slant of the palpebral fissures, esotropism with hypermetropia; short and broad nose, thin upper lip, low-set ears with poor lobulation and abundant helix, short neck, and a funnel chest with a slight depression of the sternum (similar to pectus excavatum); bilateral clinodactyly of the fifth finger; pes slightly varus with overlapping of the third and fourth toes, short fifth toe, which shows a mild clinodactyly, hallux valgum.

Clinical, radiological and electrocardiographic evidence of a cardiac anomaly was found, probably compatible with an atrial septal defect.

A systematic X-ray skeletal survey showed bilateral diaphyseal spurlike lesions of tibiae, shortening of both fourth metacarpals, with enlarged epiphyses. The bone age was corresponding to chronological age.

CODEN: AGMGAK 27 75 (1978) — ISSN: 0001-5660
Acta Genet. Med. Gemellol., 27: 75-79

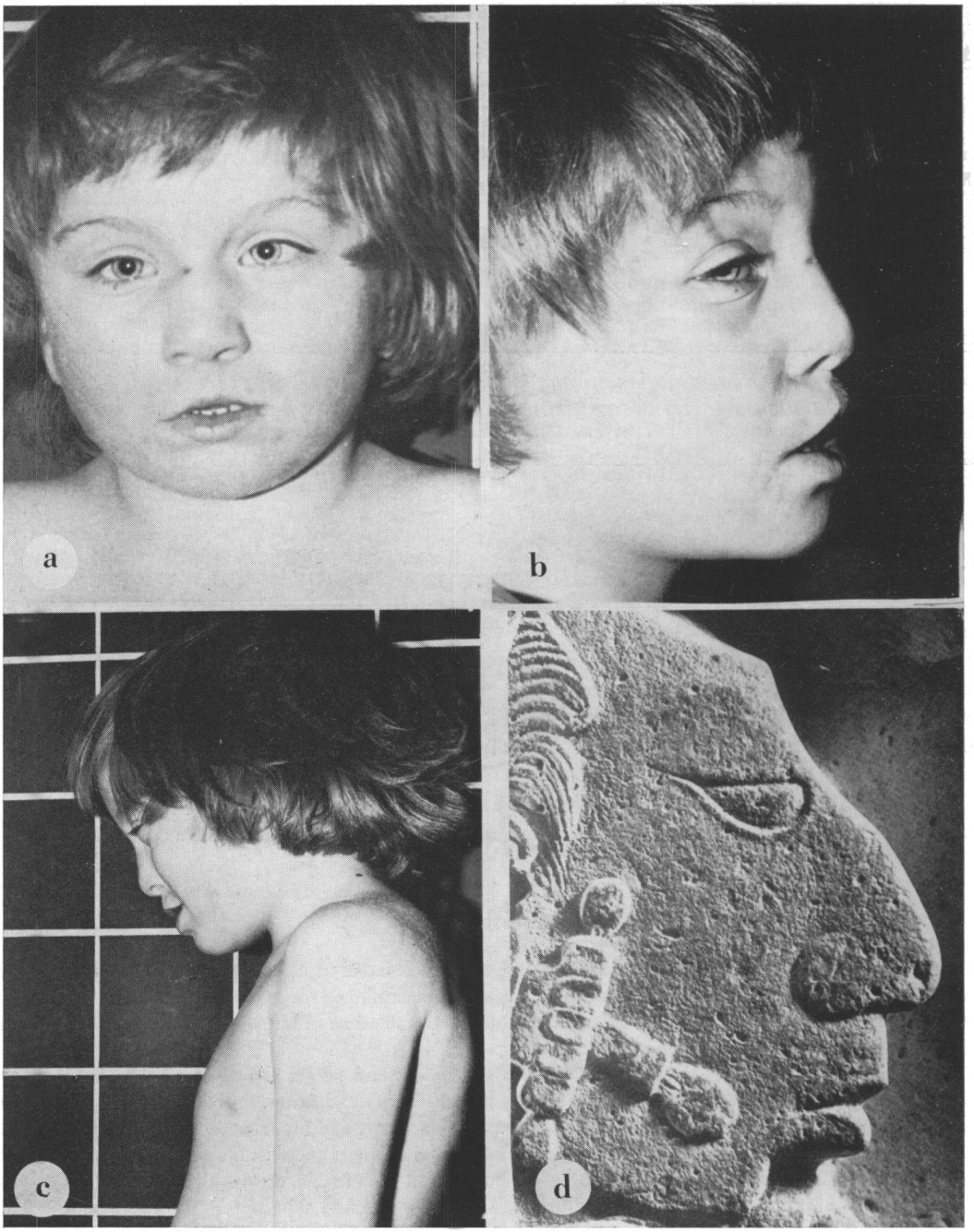

Fig. 1a,b,c. The proband; d. Mayan tablet at Yaxchilàn, Mexico.

https://doi.org/10.1017/S0001566000009533 Published online by Cambridge University Press

The neurological status was marked by increased tone, rigid walking with extrarotation of the tips of toes, and defect in equilibrium. Prehension was scarcely differentiated. Motor skills were of simple type. Sphincteric control was acquired. Language was characterized by superabundant production of words, but was scarcely communicative. There was a good comprehension of speech. On the whole, mental deficiency of moderate degree, slightly retarded psychomotor development, with a rather slow rate of cognitive learning, but without arrest or regression of development.
IQ was 68 (according to Terman scale).
EEG showed subcortical irritative discharges.
Dermatoglyphic analysis showed bilaterally displaced axial palmar triradii.

Cytogenetic Analysis

Chromosome studies were carried out on short-term peripheral blood cultures. A modal number of 46 chromosomes was found in the proposita; however, no. 2 chromosome showed an elonged long arm. Cytogenetic investigations in the parents demonstrated a normal chromosome constitution in the father, while the mother was carrier of a translocation of part of the long arm of C-group chromosome onto the long arm of a no. 2 chromosome. GAG and RBA banding identified the maternal formula as 46,XX,t(2;8)(q373;q23). Thus, the derived maternal no. 2 chromosome had segregated in the proposita, and she was trisomic for region 8q23→qter (Fig. 2).

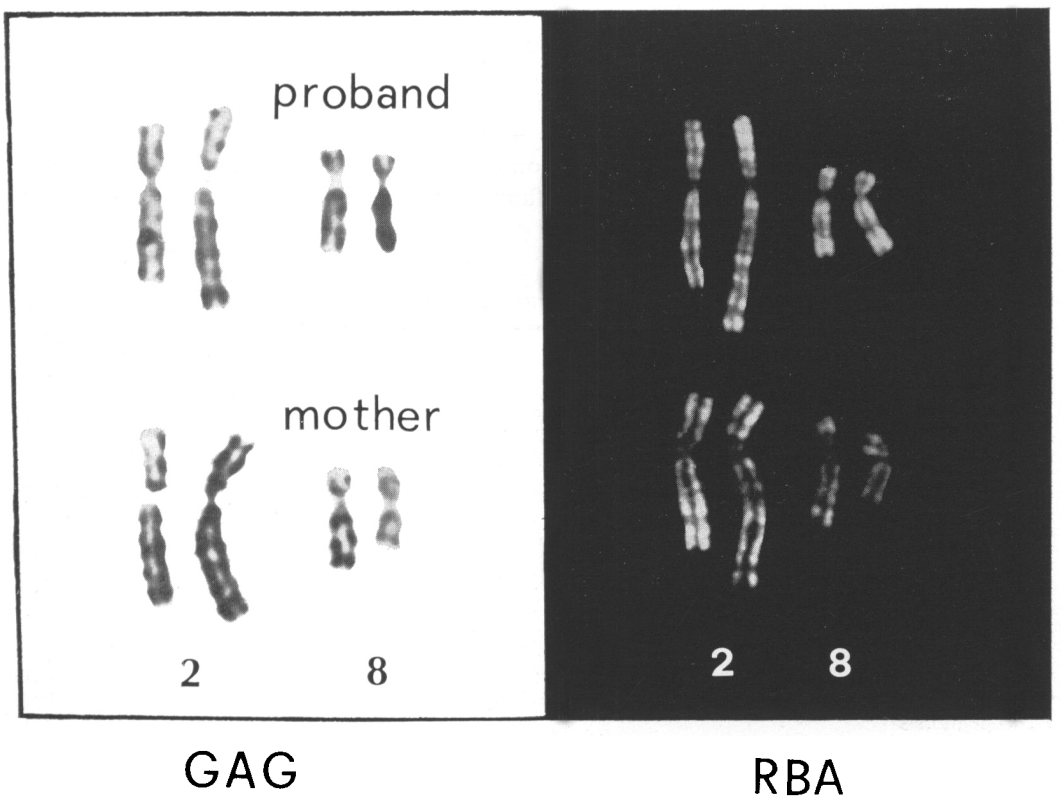

Fig. 2. Chromosomes 2 and 8 from two selected metaphase plates in the proband and in her mother (GAG and RBA banding).

https://doi.org/10.1017/S0001566000009533 Published online by Cambridge University Press

DISCUSSION

Karyotype-phenotype correlations in cases of mosaic trisomy 8 (MT8) and trisomy 8q have been critically reconsidered by Riccardi and Crandall (1978) and by Schinzel (1978) in two letters submitted to the Editors of Human Genetics. Schinzel's conclusions (1977, 1978) that the major features of MT8 syndrome are not determined by genes on distal 8q region have been rejected by Riccardi and Crandall (1978). The latter have suggested that the key features in the two groups of patients overlap sufficiently to warrant the conclusion that the clinical characteristics of MT8 syndrome are determined by genes on distal 8q.

The arguments and statements presented by the two groups of authors are of interest because they are representative of two antithetical ways of considering partial trisomy of the long arm of chromosome 8, as a clinically recognizable and nosologically distinct syndrome, or as an incomplete phenotypical copy of MT8 syndrome, respectively.

However, because of the aspecificity of the clinical signs found in chromosomal syndromes, we suggest that the enthusiasms devoted to establishing " phenotypical maps " should be prudentially repressed. Problems of clinical nature encountered in the delineation of new chromosomal syndromes have been discussed by Francke (1977).

Detailed karyotype-phenotype correlations often suffer from incomplete documentation of clinical findings and/or inadequate descriptive capacity of medical terminology. Consequently, analytic listing of isolated clinical signs often appears unable to convey the gestalt feeling.

Moreover, comparison is impossible, as often the patients have been examined at different ages. Obviously, somatic characteristics are codified even though not substantially, as the subject grows. Not only, but one must also consider the individual phenotypic characteristics of each patient which he inherits from his family and from the ethnic group to which he belongs.

Table. *Features from the previously reported cases of trisomy 8q (based on 15 cases)*

Low birth-weight	3/8*
Prominent forehead and flat occiput	4/14
Hypertelorism	5/14
Mongoloid slant of eyelids	4/15
Anti-mongoloid slants of eyelids	2/15
Strabismus	3/15
Short nose and broad base	9/15
Beaked nose	2/8
Thin upper lip and everted and drooping lower lip	6/15
Abnormal low-set ears	11/15
Funnel-chest	8/14
Pectus excavatum	5/14
Kyphosis and scoliosis	4/14
Scoliosis	5/14
Spina bifida	4/13
Congenital heart defects	4/15
Hydronephrosis	3/15
Psychomotor retardation (IQ between 21 and 70)	15/15
Chromosome anomaly, familial	13/15
Chromosome anomaly, " de novo "	2/15

* Number of cases in which the information is available

With these limitations in mind, in agreement with Rethoré et al. (1977) and Schinzel (1978) we have concluded that some features of MT8 are present in similar proportions in partial trisomies 8p and 8q (Dallapiccola and Forabosco 1978). Comparison of facial dysmorphisms in our patient and in at least one of the cases reported by Schinzel (1977) show striking similarities, rather different from those usually encountered in MT8 syndrome. The facial profile in these two patients appears to be dramatically caricatured in a Mayan painting at Bonempak (Dallapiccola 1978 and Fig. 1*d*). We are tempting to consider this " Mayan profile " suggestive of trisomy 8q and quite different from the " Mayan lip " which has been reported as a leading feature of MT8 syndrome (Francke 1978).

Thus, in the absence of most of the peculiar dysmorphisms of MT8 syndrome in most of the 8q trisomics reported so far (Table), we would consider trisomy of the long arm of chromosome no. 8 as a characteristic and distinct clinical entity.

REFERENCES

Dallapiccola B. (Ed.) 1978. Prefazione. In: Nuove Sindromi Cromosomiche: Patologia Autosomica [pp. VII-IX]. Roma: S.E.U.

Dallapiccola B., Forabosco A. 1978. Cromosoma 8. In: B. Dallapiccola (Ed.): Nuove Sindromi Cromosomiche: Patologia Autosomica [pp. 177-215]. Roma: S.E.U.

Franke U. 1977. Cytogenetics and somatic cell genetics: the impact of chromosome banding. Birth Defects: Orig. Artic. Ser., 13: 79-103.

Rethoré M.O., Aurias A., Couturier J., Dutrillaux B., Prieur M., Lejeune J. 1977. Chromosome 8: trisomie complète et trisomies segmentaires. Ann. Genet., 20: 5-11.

Riccardi V.M., Crandall B.F. 1978. Karyotype-phenotype correlation: mosaic trisomy 8 and partial trisomies of different segments of chromosome 8. Hum. Genet., 41: 363-365.

Schinzel A. 1978. Karyotype-phenotype correlation: mosaic trisomy 8 and partial trisomies of different segments of chromosome 8. Hum. Genet. 41: 365-367.

Prof. P.L. Giorgi, Istituto di Clinica Pediatrica dell'Università di Pisa, 56100 Pisa, Italy.