

## TRISOMY 8: A CASE REPORT

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**SUMMARY** – An 8-month-old infant with trisomy 8 mosaicism is described. Chromosome 8 trisomy was present in 36% of cells. Clinical characteristics were so typical that cytogenetic analysis only confirmed the diagnosis. Deep skin furrows on the palms and soles were the most pronounced phenotype characteristics, whereas most numerous alterations were those involving skeletal system and urinary tract.

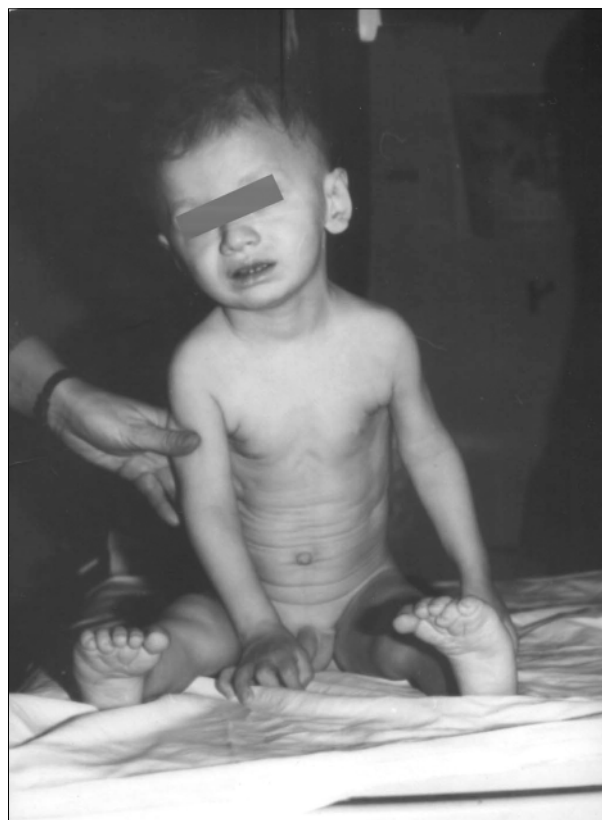
**Key words:** *Abnormalities, multiple – genetics; Chromosomes, human – pair 8; Immunologic diseases – genetics; Mosaicism; Trisomy*

### Introduction

Trisomy 8 is an autosomal chromosome aberration that usually manifests as mosaicism. It generally occurs as a new mutation, with a 3:1 male predominance<sup>1</sup>. The prevalence has been estimated to 1:25,000-50,000 newborns. The disorder frequently proceeds unrecognized due to the highly variable phenotypic and cytogenetic expression<sup>2</sup>. Clinical manifestations are numerous, and it is considered that there is low correlation between the grade of mosaicism and extent of clinical abnormalities<sup>3,4</sup>.

First reports on trisomy 8 patients appeared at the beginning of the 1960s. New techniques of clinical cytogenetics enabled differentiation of particular pairs of group C chromosomes<sup>5,6</sup>, followed by many case reports pointing to various clinical manifestations of this chromosome aberration.

The clinical signs associated with trisomy 8 include craniofacial dysmorphism (prominent forehead, saddle nose with upward nares, low-set ears, micrognathia, thick lips, cleft palate, and ophthalmic anomalies), bone abnormalities involving the spine, ribs, clavicle, pelvis, femur, metacarpal bone and phalanges. Joint contractures and congenital heart diseases are common find-



*Fig. 1. Dysmorphic features of the face and skull in the 8-month-old male infant.*

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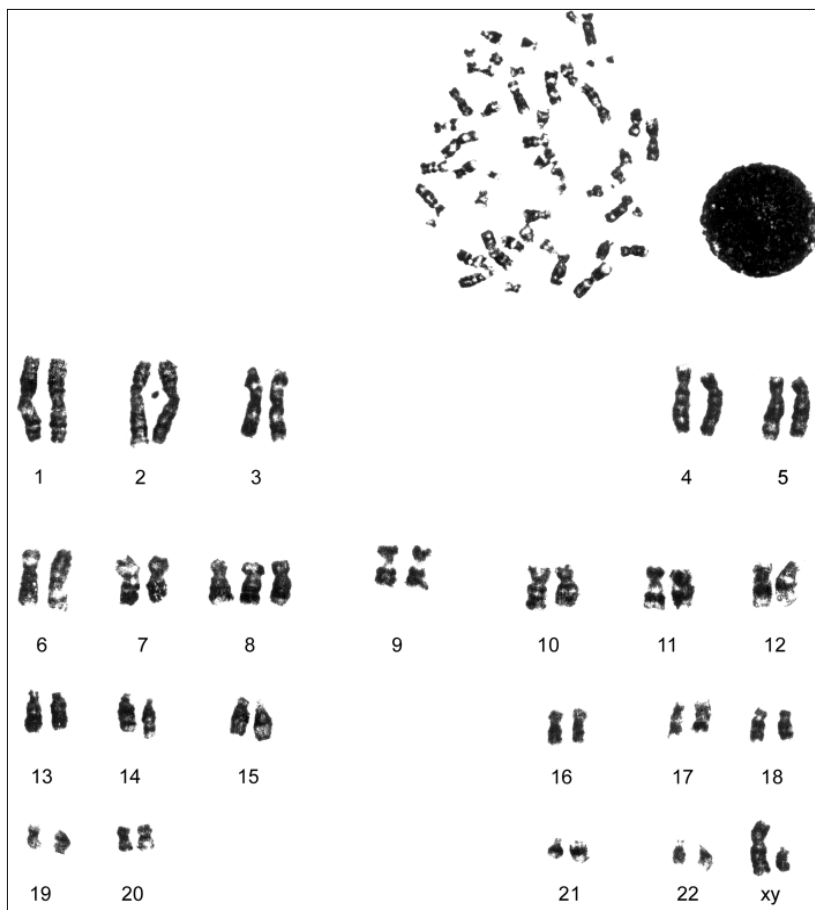
Fig. 2. Low-set and dysplastic ears.



Fig. 3. Deep skin furrows on the soles.

ings; urinary tract malformations are found in almost every other patient<sup>2</sup>; corpus callosum agenesis, mental retardation and typical dermatoglyphics with deep palmar and plantar furrows are by some authors considered pathognomonic for the syndrome<sup>7,8</sup>. In addition to

these well known alterations, some new, not yet described abnormalities have recently been reported, e.g., radial deviation of the wrist<sup>9</sup>, heterotaxia<sup>10</sup>, perineum anomalies and biliary atresia<sup>11</sup>, a higher rate of hematologic malignancy<sup>12</sup>, and immunodeficiency<sup>13</sup>.

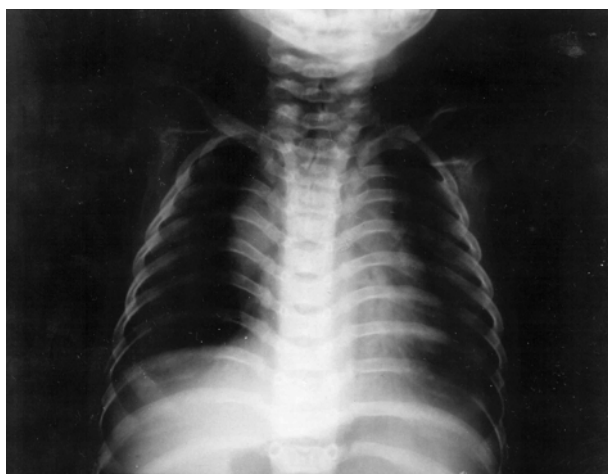


### Case Report

The 8-month-old male infant was the first child to young and healthy unrelated parents with normal phenotype and karyotype. There was no family history of congenital malformations or mental retardation. During pregnancy, the mother received medical therapy for urinary infection. The delivery proceeded uneventfully; birth weight 3500 g, birth length 56 cm. Until 8 months of age, the child had been hospitalized on three occasions at another hospital for respiratory infection, and was now referred to our department for unexplained febrility.

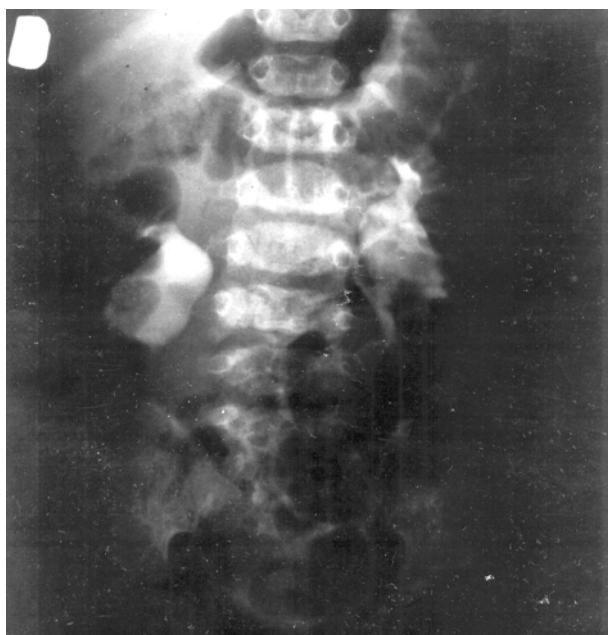
On admission, the patient was febrile, body mass 8700 g, body height 76 cm, cranial circumference 45 cm. The head was parieto-occip-

Fig. 4. The aberrant cell line karyotype (47,XY,+8).



*Fig. 5. Sheer-set ribs and deformed clavicles.*

itally aplanatic with prominent frontal tubers and pronounced craniofacial disproportion. The nose was wide and saddle-shaped, with upward nares. There was micrognathia with thick lower lip and extremely high hard palate, and large, low-set and dysplastic auricles. The neck was short and wide, and the chest narrow with wide-set mammillae. The thumbs and big toes were spade-shaped, and both finger nails and toe nails deep seated. Both feet showed pes adductus. Deep furrows were seen on the upper half of the soles as well as on



*Fig. 6. Urinary tract malformations.*

the palms, with full mobility of all joints. External genitalia of normal appearance. Muscular hypotonia with motor and mental development retardation.

Routine laboratory tests showed normal findings, with the exception of decreased hemoglobin and hematocrit. Urine analysis and urine culture suggested urinary tract infection. Ophthalmologic examination revealed a vertical-oval form of PNO. Radiography of the chest and spine showed a dumpy shape of posterior costal segments with sheer-set ribs, bilateral clavicular handlebar-like deformity, and minimal lumbar spine scoliosis. Craniography showed a turricephalic shape of the skull, whereas radiography of the pelvis revealed narrow iliac bone wings bilaterally, with wide and dumpy femoral necks, especially on the left. Radiography of the wrists showed dumpy metacarpal bones and phalanges with decreased mineralization, recorded in all bones. IVU: renal capsules enlarged and hypotonic bilaterally, with meager calices on the right, the right kidney rotated along its longitudinal axis. A low posterior ureter junction to the capsule seen on the right.

Cytogenetic analysis: chromosome identification was performed by the GTG strand method on slides obtained by the routine method of peripheral blood cell culture. Cytogenetic analysis of the proband revealed two cell lines: one with normal chromosome number and morphology, and another one with 47 chromosomes and chromosome 8 trisomy. Chromosome 8 trisomy was present in 36% of cells. The analysis performed in both parents showed normal karyotype.

## Conclusion

Trisomy 8 mosaicism is considered one of the most common autosomal trisomies after trisomy 13, 18 and 21<sup>3,14</sup>. Clinical manifestations of this chromosome aberration are numerous and variable, while the mean age at detection is older than for other autosomal trisomies, thus making estimate of its prevalence more difficult<sup>1,3</sup>. In our patient, the diagnosis was made at the age of 8 months, based on extensive diagnostic work-up urged by deep furrows on the infant's palms and soles. Although chromosome 8 trisomy was only present in 36% of cells, clinical manifestations were numerous, especially on the skeletal system, confirming the opinion that pathologic changes in this syndrome do not correlate with the percentage of aberrant cells. As bone anomalies occur in almost every patient with this chromosome aberration, trisomy 8 should be taken in con-

sideration whenever skeletal abnormalities are associated with urinary tract anomalies, mental retardation, or dermatoglyphic changes.

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## Sažetak

### TRISOMIJA 8: PRIKAZ BOLESNIKA

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Prikazuje se osmómjesečno dojenče s mozaicizmom trisomije 8, kod kojega je trisomija kromosoma 8 bila prisutna u 36% stanica. Kliničke značajke bile su tako znakovite da je citogenetska analiza samo potvrdila dijagnozu. Od fenotipskih oznaka naročito su se isticale duboke brazde dlanova i tabana, a najbrojnije promjene bile su na koštanom i mokraćnom sustavu.

Ključne riječi: *Neormalnosti, višestruke – genetika; Kromosomi, ljudski – par 8; Imune bolesti – genetika; Mozaicizam; Trisomija*