LETTER TO THE EDITOR

# Hematological abnormalities in Jacobsen syndrome: cytopenia of varying severities and morphological abnormalities in peripheral blood and bone marrow

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**Table S1. Hematological findings and other complications of 4 patients in our cohort.**

| | Case 1 | Case 2 | Case 3 | Case 4 |
|---|---|---|---|---|
| **Range of 11q deletion (hg19)** | 124252297 –134257553 | 123396856 –134121202 | 122526757 –134257553 | 119440000 –134939999 |
| **Hematological findings** | | | | |
| *Age at onset of cytopenia, months* | 121 | 191 | 0 | 0 |
| *Bone marrow cellularity* | Normocellular | Normocellular | Hypocellular | ND |
| *Cytopenia* | Yes | Yes | Yes | Yes |
| Neutropenia | No | No | Yes | No |
| Anemia | Yes | Yes | Yes | No |
| Thrombocytopenia | Yes | Yes | Yes | Yes |
| **Non-hematological findings** | | | | |
| *Congenital heart disease* | Yes | Yes | Yes | Yes |
| HLHS | No | No | No | Yes |
| VSD | Yes | Yes | Yes | Yes |
| Shone's complex | No | No | No | No |
| ASD | No | No | No | No |
| Others | Yes | Yes | Yes | Yes |
| *Skeletal abnormality* | Yes | Yes | No | Yes |
| Craniofacial abnormalities | Yes | Yes | No | Yes |
| Vertebral body anomalies | No | No | No | No |
| Scoliosis | No | No | No | No |
| Hip dislocation | No | No | No | No |
| *Gastrointestinal tract malformation* | No | No | No | No |
| Pyloric stenosis | No | No | No | No |
| Gut malrotation | No | No | No | No |
| Annular pancreas | No | No | No | No |
| Anal abnormality | No | No | No | No |
| Duodenal atresia | No | No | No | No |
| Inguinal hernia | No | No | No | No |
| *Urinary system malformation* | No | No | No | Yes |
| Unilateral kidney dysplasia | No | No | No | No |
| Horseshoe kidney | No | No | No | Yes |
| Multicystic kidneys | No | No | No | No |
| Hydronephrosis | No | No | No | No |
| Double urethers | No | No | No | No |
| Cryptorchidism | No | No | No | No |
| *Mental retardation* | Yes | Yes | No | Yes |
| *Structural abnormality of the brain* | No | No | No | No |
| Enlarged ventricles | No | No | No | No |
| Agenesis of corpus callosum | No | No | No | No |
| Spina bifida | No | No | No | No |

| | | | | |
|---|---|---|---|---|
| Sensorineural deafness | No | No | No | No |
| *Immunodeficiency* | No | No | No | Yes |
| CD4+ T lymphocytopenia | No | No | No | Yes |
| **Treatment** | | | | |
| *Blood transfusion* | No | No | Yes | Yes |
| *Bone marrow transplantation* | No | No | No | No |

HLHS; hypoplastic left heart syndrome, VSD; ventricular septal defect, ASD; atrial septal defect, ND; not determined

**Table S2. Supplemental References**


| No. | Reference |
|---|---|
| S1 | Fujita H, Yanagi T, Kosaki R, et al. Transverse limb defect in a patient with Jacobsen syndrome: concurrence of malformation and disruption. Am J Med Genet A. 2010 Apr;152A(4):1033-1035. |
| S2 | Malia LA, Wolkoff LI, Mnayer L, Tucker JW, Parikh NS. A case report: Jacobsen syndrome complicated by Paris-Trousseau syndrome and Shone's complex. J Pediatr Hematol Oncol. 2015 Oct;37(7):e429-e432. |
| S3 | Lo JO, Feist CD, Hashima J, Shaffer BL. Jacobsen syndrome detected by noninvasive prenatal testing. Obstet Gynecol. 2015 Feb;125(2):387-389. |
| S4 | Jurcă AD, Kozma K, Ioana M, et al. Morphological and genetic abnormalities in a Jacobsen syndrome. Rom J Morphol Embryol. 2017;58(4):1531-1534. |
| S5 | Zahn S, Ehrbrecht A, Bosse K, et al. Further delineation of the phenotype maps for partial trisomy 16q24 and Jacobsen syndrome by a subtle familial translocation t(11;16)(q24.2;q24.1). Am J Med Genet A. 2005 Nov 15;139(1):19-24. |
| S6 | Trkova M, Becvarova V, Hynek M, et al. SNP array and phenotype correlation shows that FLI1 deletion per se is not responsible for thrombocytopenia development in Jacobsen syndrome. Am J Med Genet A. 2012 Oct;158A(10):2545-2550. |
| S7 | Breton-Gorius J, Favier R, Guichard J, et al. A new congenital dysmegakaryopoietic thrombocytopenia (Paris-Trousseau) associated with giant platelet alpha-granules and chromosome 11 deletion at 11q23. Blood. 1995 Apr 1;85(7):1805-1814. |
| S8 | Krishnamurti L, Neglia JP, Nagarajan R, et al. Paris-Trousseau syndrome platelets in a child with Jacobsen's syndrome. Am J Hematol. 2001 Apr;66(4):295-299. |
| S9 | Johnson JP, Haag M, Beischel L, et al. 'Deletion rescue' by mitotic 11q uniparental disomy in a family with recurrence of 11q deletion Jacobsen syndrome. Clin Genet. 2014 Apr;85(4):376-380. |
| S10 | Penny LA, Dell'Aquila M, Jones MC, et al. Clinical and molecular characterization of patients with distal 11q deletions. Am J Hum Genet. 1995 Mar;56(3):676-683. |
| S11 | Lin JH, Hou JW, Teng RJ, Tien HF, Lin KH. Jacobsen distal 11q deletion syndrome with a myelodysplastic change of hemopoietic cells. Am J Med Genet. 1998 Feb 3;75(4):341-344. |
| S12 | Van Zutven LJ, van Bever Y, Van Nieuwland CC, et al. Interstitial 11q deletion derived from a maternal ins(4;11)(p14;q24.2q25): a patient report and review. Am J Med Genet A. 2009 Jul;149A(7):1468-1475. |
| S13 | Schinzel A, Auf der Maur P, Moser H. Partial deletion of long arm of chromosome 11[del(11) (q23)]: Jacobsen syndrome. Two new cases and review of the clinical findings. J Med Genet. 1977 Dec;14(6):438-444. |
| S14 | Voullaire LE, Webb GC, Leversha MA. Chromosome deletion at 11q23 in an abnormal child from a family with inherited fragility at 11q23. Hum Genet. 1987 Jun;76(2):202-204. |
| S15 | Clang DR, LaBaere RJ, II. Jacobsen syndrome: chromosome deletion at 11q23. J Am Osteopath Assoc. 1998 Oct;98(10):551-554. |
| S16 | Michaelis RC, Velagaleti GV, Jones C, et al. Most Jacobsen syndrome deletion breakpoints occur distal to FRA11B. Am J Med Genet. 1998 Mar 19;76(3):222-228. |
| S17 | Chen CP, Lin SP, Hsu CH, et al. Pure distal 11q deletion without additional genomic imbalances in a female infant with Jacobsen syndrome and a de novo unbalanced reciprocal translocation. Genet Couns. 2012;23(2):223-229. |

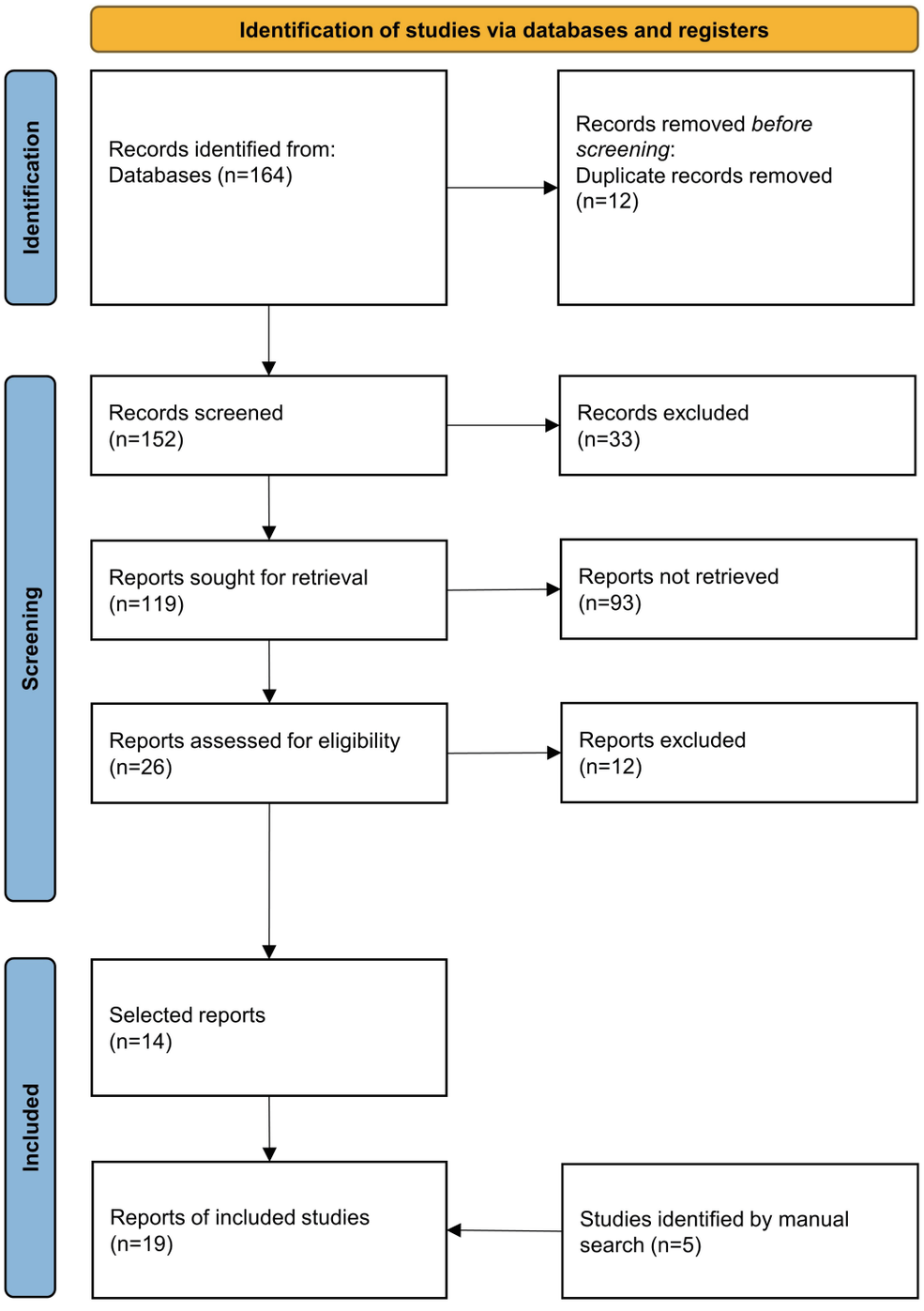
Identification of studies via databases and registers
Identification
Records identified from:
Databases (n=164)
Records removed *before screening*:
Duplicate records removed
(n=12)
Screening
Records screened
(n=152)
Records excluded
(n=33)
Reports sought for retrieval
(n=119)
Reports not retrieved
(n=93)
Reports assessed for eligibility
(n=26)
Reports excluded
(n=12)
Included
Selected reports
(n=14)
Reports of included studies
(n=19)
Studies identified by manual search (n=5)

**Figure S1. Flow diagram of literature review**

A flow diagram was created by performing a search using the following formula:

“Jacobsen syndrome”[MH] AND (“pancytopenia”[TIAB] OR “anemia"[TIAB] OR “neutropenia”[TIAB] OR “thrombocytopenia”[TIAB]) AND (“Cohort Studies"[MH] OR “Case Reports"[PT]) AND Humans[MH] AND (English[LA]) AND (“0000"[PDAT]: “2022/08/31"[PDAT])