

Supplementary Table 1 Clinical characteristics of 15 novel patients and 13 previously published patients. Frequency of symptoms in 24 patients sharing the shortest region of overlapping deletion is calculated.

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
DECIPHER ID			2575	251017	252523	252522
Sex	male	female	male	male	female	female
Age at report	19y 6m	17y	4y 6m	1y 6m	10y 10m	5y 1m
Birth weight (g)		3040 (15-50th)		3680 (50-85th)	3110 (15-50th)	2510 (3rd-15th)
Birth length (cm)				52 (85th)	50 (50-85th)	47 (15th)
Birth OFC				36 (85-97th)	37 (99th)	33 (15-50th)
Weight (kg)		obese		85th-97th	26 at 6y2m (95th)	19 at 4y10m (<75th)
Height (cm)	187 (95th)	at 3y (50th)		85th-97th	126 at 6y2m (97th)	112.5 at 4y10m (85th)
OFC (cm)	59.5 (90th)	at 3y (50th)		<50th	50.6 at 2y3m (>97th), 53.5 at 6y2m (90th)	52 at 4y10m (90th)
Brain/CNS malformations					cerebral ventriculo- megaly ***	ACC, enlarged lateral ventricle
Developmental delay	+	+	+(IQ<50)	?	+	+
Delayed speech	-	+	+	+	+	
Behaviour problems	attention deficits		autism, risky behaviour, hyperactivity	autism, repetitive behaviour, anxious	attention deficits	
Hypotonic	+	+		+	+	
Skull abnormalities	dolichocephaly			brachycephaly, relative microcephaly		
Prominent/Broad forehead	+	+ broad face		+	+	+
Strabism	+	-		-	-	-
Myopia	+	+		?		+
Ptosis	-/+sin			-		
Epicanthal folds	?	-		+		
Hypertelorism	-	+		-	-	+
Antimongoloid slant	+	+		+		+
Short philtrum	+	+		+	+	
High arched palate	++	+		-		
Ears	large			small, low set		
Abnormal external genitalia in male	small testis 8ml		shawl scrotum	micropenis, retention testis bilat		
Skeletal	kyphosis, small hands, long fingers	small hands, short fingers and first toe, proximal set thumbs		small hands, short fingers, proximal set thumbs		
Other malformations	crowded teeth and soft enamel		hypothyroidism	atrophic right kidney,		
Other dysmorphic features				sits independently, but does not stand or walk		

Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13	Case 14*
250169		4673					252520
male	male	male	female	male	male	female	male
4y 10m	18y	10y 6m	13y 7m	12y 4m	9y	9y 6m	5y 6m
	3430 (50-85th)	3850 (85th)	3480 (50-85th)	3485 (50th)	3200 (50th)	3490 (50-85th)	
		51 (50-85th)	50 (50-85th)	52 (85th)	40		
		35 (50-85th)	36.5 (99th)	37 (97th)			
25 at 4y6m (>99th)		46 (97th)	84.5 obese	42	46.9 (>99th)	29.4 (50th)	
114 at 4y6m (97th)	195 (>99th)	148.7 (85-95th)	173 (97-99th)	154 (50-75th)	142 (95th)	135 (50th)	
54 at 4y6m (97th)	59.7 (97th)	53.5 (50th)	54.5 (50th)	58 (97th)	57.9 (>97th)	54.5 (90th)	
?	+ (IQ<50)	+	+	+	+	+ (IQ 55)	+
	+	+	-	+	+	+	
attention deficits	attention deficits, some repetitive behaviour		hyperphagia		attention deficits	autism**, short attention span	
+	+		-		-	-	
	macrocephaly					brachycephaly	
+	+		-	+	-	-	
-	-	?	-	+	+	-	
			-	-	-	-	
	-		-	-	-	+	
	-		-	+	-	-	
+	-		-	+	-	-	
+	-	-	-	-	-	-	
+							+
	+		?	?	+	-	
low set	large, fleshy	large volumin. lobes	normal	normal	low set	large	
micro- orchidism, micropenis	normal	bilat cryptorchidism op.		normal	micropenis/ cryptorchidism		
	tapering fingers	small hands, short tapering fingers, proximal set thumbs	small hands		pes planus, with enlarged base and flexion of trunk	flexion contracture of digiti V left hand op., pes planus, mild sandal gap digiti IV-V	
					crowded teeth, paresis of VII cranial nerve		
	pointed chin						

Case15*	Kosaki [10]	Malan [11]	Simovich [14]	Lawson-Yuen [4]	Okada [6]	Fujita [1]	Genuardi [2]
	971						
male	male	male	male	female	female	male	male
8y 10m	At birth	3y	20m	4y	8y	6y	5m
3870 (85th)	3018 (15th)	1940 (50th c)	1418 at 30w (50th)		2600 (3-15th)	3100 (15-50th)	2910 (15th)
52 (85th)		45 (50th c)	40 at 30w (40th)		47 (15th)	48.5 (15-50th)	50 (25th)
36 (85th)		32 (50th)			30 (<1st)	35 (50-85th)	
40 (97-99th)		19 (99th)	12.7 (50th)	2.86 at 1m (5th)	17.2 (1st)	-2SD	7 (25-50th)
133 (50-75th)		119 (>99th)	83.8 (50th)	51 at 1m (25th)	103.5 (<1st)	normal	64.5 (10th)
55 (90th)		53 (97th)	49.5 (50-75th)	36 at 1m (50th)	51.5 (>50th)	-2SD	43 (50th)
				ACC			ACC
		+	-	+ (IQ<50)	+	+ (IQ22)	
+		+	-	+	+	+	
-			-	+	+	+	+
					plagiocephaly, increased right frontal and left occipital diameter	flat occiput	dolicocephaly, bitemporal narrowing, mild cranial assymetry
-			+				
+				+		+ (exotropia)	
-				+ sin			
+				-		+	
+	+	+	+	-	+	+	+
+	+		+	-	+		+
+			-				
?	+		-	-	+		
normal	low set		large, low set			large, odd-shaped	low set, posteriorly rotated
		shawl scrotum	small left, right in the inguinal canal		normal	cryptorchidism	hypoplastic, micropenis, cryptorchidism
small hands with bilat single palmar crease			small hands, brachydactyly, broad great toes bilat.		double structural scoliosis, joint contractures	tight hips, joint contractures, long tapered fingers, pes valgus, talipes equinovarus	small, puffy feet, deviating 2nd toe bilat, tapered fingers, adducted thumbs, talipes equinovarus
	cloacal exstrophy with omphalocele, ileal atresia, imperorated anus, OEIS complex, no penile structure		malformed sacrum, spina bifida, tethered cords and skin-covered lipomyeloceles, Tetralogy of Fallot		type II fibre atrophy, anemia with iron deficiency, excess serum IgG, renal anomaly	nuclear cataract, nystagmus, severe constipation	nystagmus, ureteral anomaly, urethral valve stenosis
		prominent nasal bridge, bulbous nasal tip, everted lips, double hair whorl	flat nasal bridge, anteverted nares dry and erythematous skin, symphysis pubis diastasis	broad nasal root, small nose, anteverted nares	midfacial dysplasia, skin pigmentation,	thin lips, short palpebral fissures, short sternum	broad nasal root, anteverted nares, long philtrum, small mouth

Jenkins [3]	Ogilvie [5]	McMorrow [7]	Arai [8]	Hou [9] Sato [12]	Shimajima [13]	Freq. in patients with SRO
female	male	male	male	female	female	15/25
7y	1y 5m	infant	58h	>3y	4y 11m	
				2800 (15th)	2688 (25th)	normal
				48.5 (5th)	47.5 (25th)	normal
				32 (3-15th)	33.5 (75th)	4/11 have >85th
97th	10th			growth retardation	13.8 at 3y2m (50th)	9/19 have >85th
80th	10th			growth retardation	94.6 at 3y2m (75th)	10/21 have >85th
50th	10th				49.5 at 3y2m (75th)	9/20 have >85th
	ACC	ACC, dilated cerebral ventricles	alobar holopros encephaly			3 ventriculomegaly, 5 ACC, 1 alobar holoprosencephaly
+ (IQ47)	+			+	+	19/21
+	+					15/17
				epilepsy		7 or 8 autism/hyperactivity 1 epilepsy
+					+	12/15
brachycephaly	plagiocephaly					2 dolichocephaly 2 plagiocephaly 3 brachycephaly
	+			high forehead		10/13
					+	6/14
						4/8
+					-	4/11
+					+, blepharophimosis	8/14
-				+	-	7/17
+	+					7/13
						6/6
				+	+	7/10
normal	over-folded			malformed	normal	5 large/15 4 low set/15
	normal	bilateral cryptorchidism	cryptorchidism			11/15
thoracic kyphosis, excessive lumbar lordosis, 7 ulnar loops, 3 whorls	scoliosis, lordosis, kyphosis, broad hands/feet, hypoplastic pelvis	multiple joint contractures, talipes, equinovarus		thoracolumbar scoliosis	scoliosis, joint hyperlaxity, arachnodactyly, valgus foot	16/24 skeletal malformation
		unilateral hydronephrosis	midline cleft lip and palate, PDA (Patent ductus arteriosus)	mild peripheral sensorineural hearing impairment, coloboma iris, arhinia with complete airway obstruction		
reddish skin, edema, mild webbing, slightly broad chest and widely spaced nipples	upturned nose, pointed chin, prominent supra-orbital ridges, mid-face hypoplasia, prominent nostrils	mildly dysmorphic face, small thoracic cage		short palpebral fissures, small eyes	pointed chin, flat and broad nasal root, small nose, dysarthric speech	

SRO=shortest region of overlapping deletion,

ACC=agenesis of corpus callosum

* cases not included in the frequency column since the deletion did not overlap with the SRO

** autism also in the brother without the deletion; his IQ 68 (47,XXY)

*** enlarged 4th ventricle and magna cisterna suggesting vermis hypoplasia