

CONGENITAL ANOMALIES AND CEREBRAL PALSY.

DATA FROM THE PORTUGUESE CEREBRAL PALSY SURVEILLANCE PROGRAM

ANA CADETE, TERESA FOLHA, PAULA BRAZ, EULÁLIA CALADO, JOAQUIM ALVARELHÃO, DANIEL VIRELHA

ON BEHALF OF THE **NATIONAL SURVEILLANCE OF CEREBRAL PALSY IN PORTUGAL,**

AFFILIATED TO **SURVEILLANCE OF CEREBRAL PALSY IN EUROPE**



CONGENITAL ANOMALIES AND CEREBRAL PALSY.

► Background and Objectives

- *The Portuguese National Surveillance of Cerebral Palsy (PVNPC) registers **clinical, epidemiological, and functioning data** of children with cerebral palsy (CP) at 5-8 year old, born in the 21 st century.*
- *The prevalence of CA in children with CP is much higher than in the general population; Recent studies have drawn attention to the **association of the presence of Congenital Anomalies (CA) with severity and complexity of CP.** Evidence of this association in children with CP living in Portugal is presented.*



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► Materials/Methods

- PVNPC actively registers CP **children at 5-8 years-old, following the common Surveillance of Cerebral Palsy in Europe protocol**, including CP definition and classification, neuroimaging, and associated impairments;
- The PVNPC additionally uses two 5-level classifications: the **Complexity Clinical Score** and the **Educational Inclusion Classification** scale;
- Data from the Portuguese National Registry of Congenital Anomalies (CA) and the PVNPC were cross-referenced to complement the information on CP;
- Children with CP **born between 2001-2015 and reported to the PVNPC between 2006-2024** were analyzed;
- The **CA were characterized according to ICD-10**, following the **EUROCAT criteria**;
- Associations between the clinical forms of CP, complexity indicators and the presence of CA were explored.
- Proportions were described with 95% confidence interval, Univariate Chi-square test was used to assess associations.

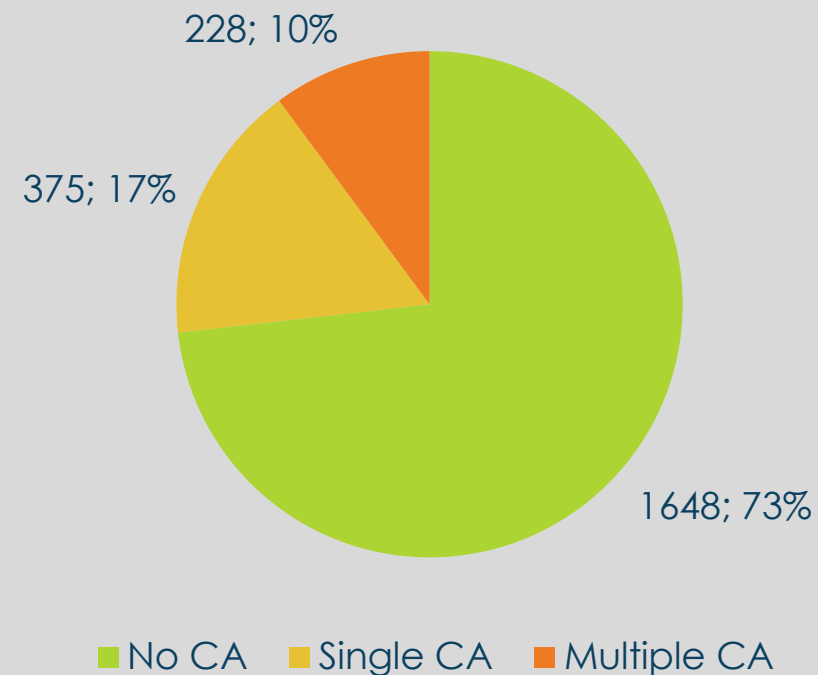


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► Results

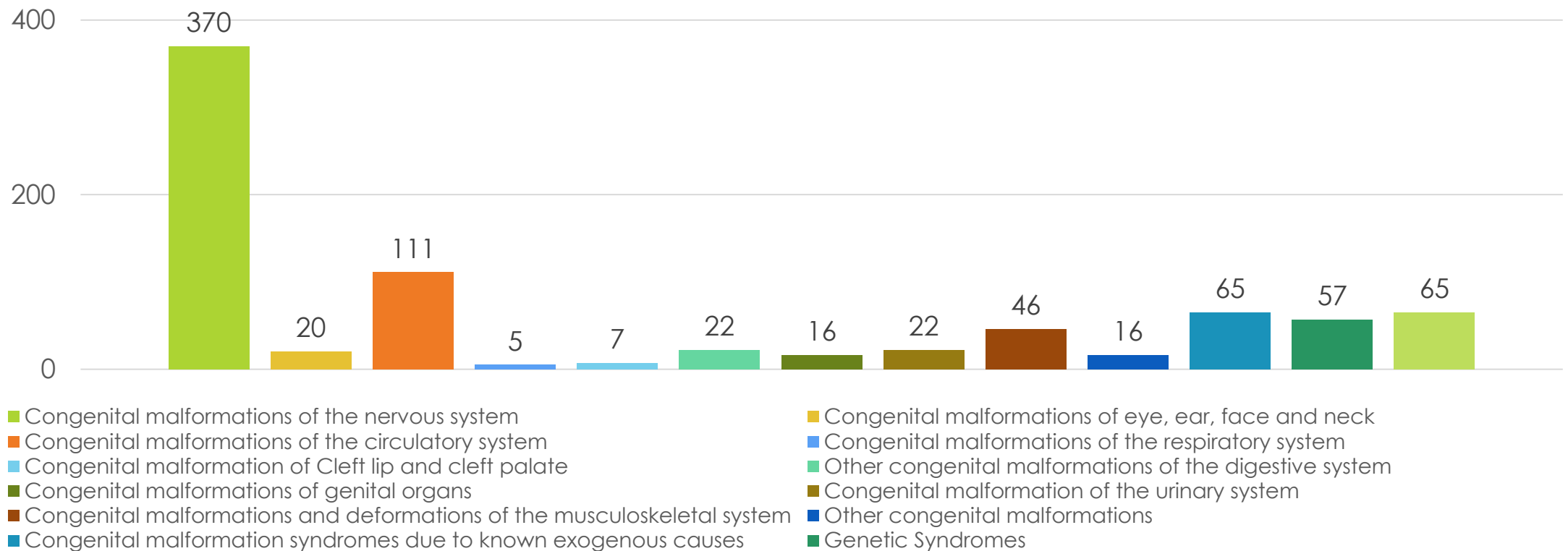
- Of 2251 CP children notified to the PVNPC until September 2024 (born 2001-2015), 603 (26.8%; 95%CI 24.9-28.6) recorded the presence of at least one CA;
- 228 children had multiple CA (10.1%; 95%CI 8.9-11.4).

Presence of congenital anomaly (CA) – Single and Multiple



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Number of cases by subgroup of Congenital Anomaly (CA)



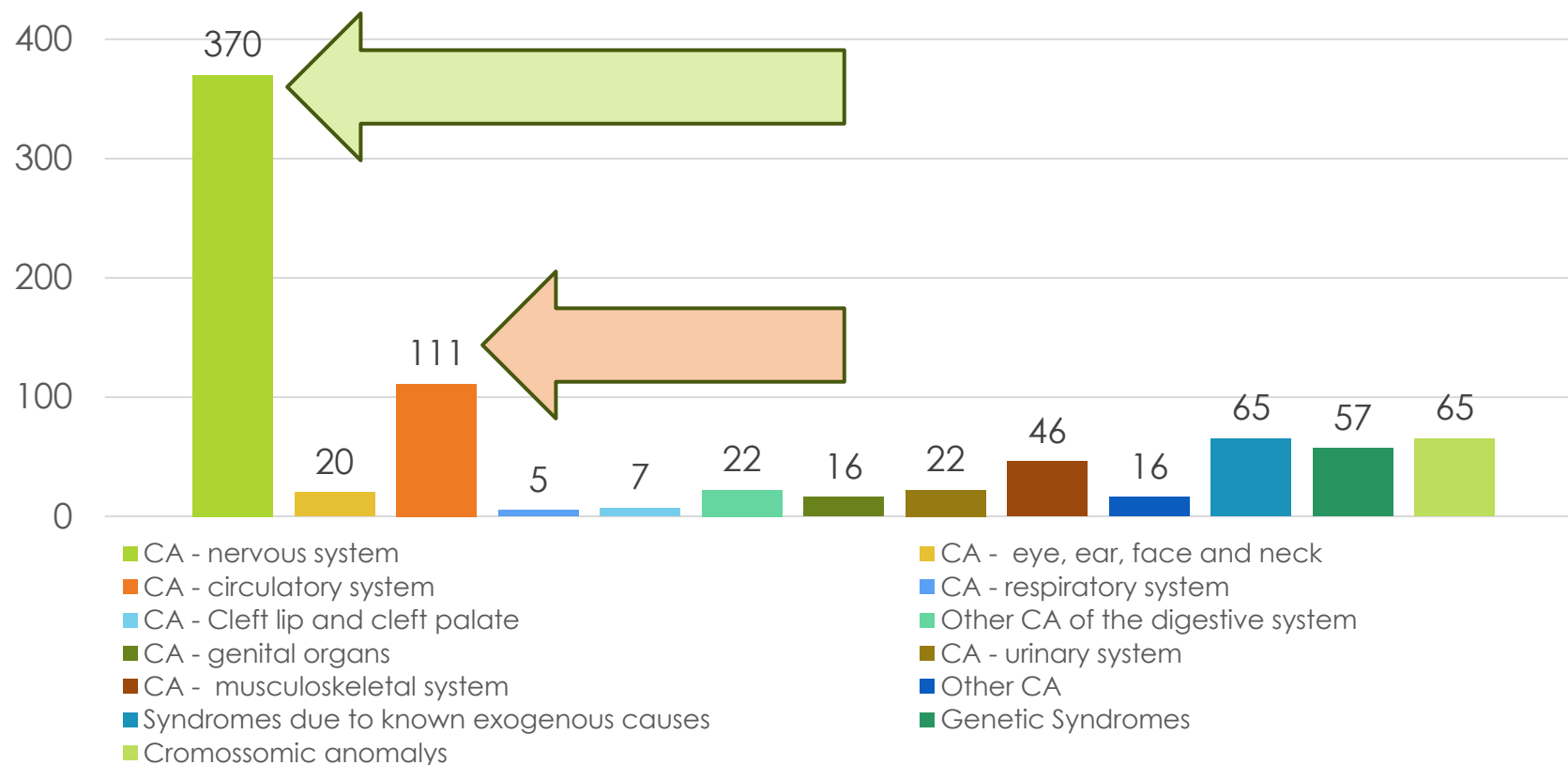


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► Results

- CA of the nervous system (CANS) ICD-10 Q00-Q07 is the most frequent (16.4%; 95%CI 14.9-18.0),
- followed by CA of the circulatory system (CACs) ICD-10 Q20-Q28 (4.9%; 95%CI 4.1-5.9).

Number of cases by subgroup of Congenital Anomaly (CA)





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- ▶ **Results: Highlights of the results of the cases with Congenital Anomaly of the Central Nervous System**
 - ▶ More ataxias 11.9 vs 3.7 p<001
 - ▶ More severe:
 - ▶ GMF levels 4-5: 52.7% vs 38.2; p<001
 - ▶ MACS levels 4-5: 50.8% vs 34.3% p<001
 - ▶ Viking Scale 3 and 4 69% vs 43.9 p<001
 - ▶ severe to moderate cognitive impairment 67.3% vs 43.6 p<001
 - ▶ Epilepsy 59.5% vs 42.1% p<001;
 - ▶ complexity 0 indicators 17.4% vs 36.2% p<001; Not being included 5 years 27.8% vs 15.9% p<001; compulsory schooling 34.8% vs 23.1% p<001;

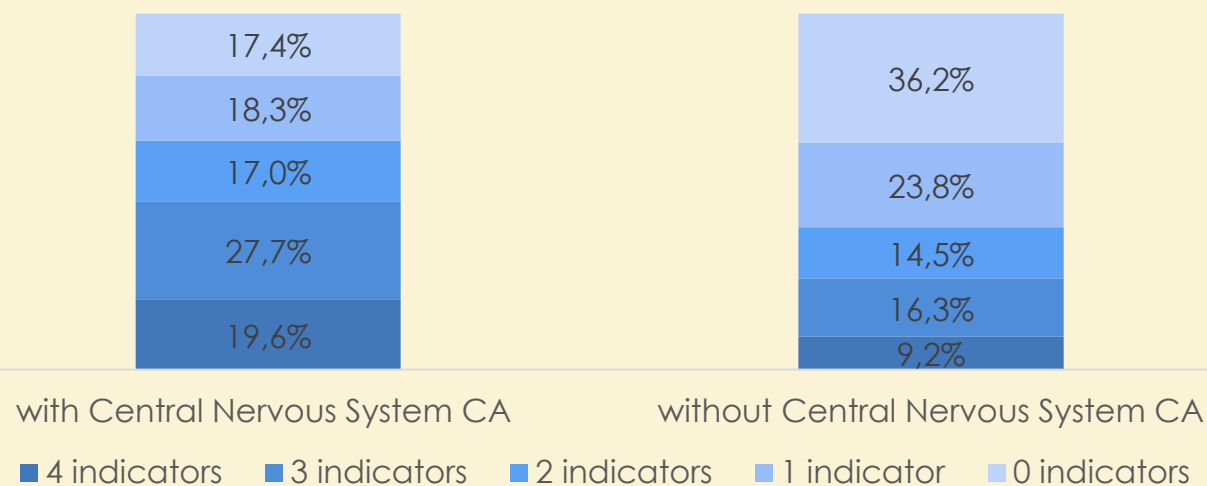


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Results: Highlights of the results of the cases with Congenital Anomaly of the Central Nervous System

- ▶ complexity 0 indicators 17.4% vs 36.2% $p < 0.001$;
- ▶ Not being included at 5 years 27.8% vs 15.9% $p < 0.001$;
- ▶ Not being included at compulsory schooling 34.8% vs 23.1% $p < 0.001$;

CENTRAL NERVOUS SYSTEM AC - COMPLEXITY CLINICAL SCORE n=1625



Complexity CP scale (Quantifies the number of severity indicators):

- ▶ not walking (GMFCS levels III, IV, V);
- ▶ moderate to severe cognitive impairment (IQ <50);
- ▶ active epilepsy;
- ▶ severe visual and/or hearing impairment.

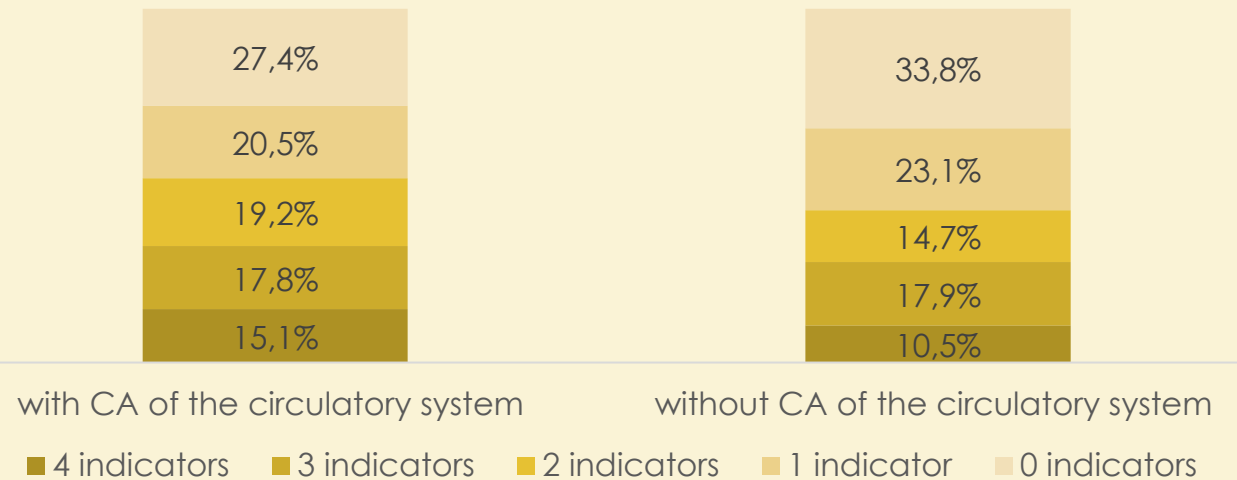


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Results: Highlights of the results of the cases with Congenital Anomaly of the circulatory system

- ▶ complexity similar indicators 27.4% vs 33.8% p 0,502 ;
- ▶ Similar inclusion in the school system at 5 years 66.7% vs 75.0% p,513;

CIRCULATORY SYSTEM AC - COMPLEXITY CLINICAL SCORE
n=1625



Complexity CP scale (Quantifies the number of severity indicators):

- ▶ not walking (GMFCS levels III, IV, V);
- ▶ moderate to severe cognitive impairment (IQ <50);
- ▶ active epilepsy;
- ▶ severe visual and/or hearing impairment.



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► **Conclusion**

- *The prevalence of CA in children with CP is much higher than in the general population and increases the odds for greater severity and/or complexity of CP.*
- *The odds seems to be higher in the presence of CANS.*
- *This should be considered when assessing the prognosis and planning intervention.*



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OBRIGADA / THANK YOU

ana.cadete@scml.pt