



## The Ogival Palate: A New Risk Marker of Sudden Unexpected Death in Infancy?

### Authors :

Mathilde DUCLOYER<sup>1</sup>, Matthieu WARGNY<sup>1</sup>, Charlotte MEDO<sup>1</sup>, Karine LEVIEUX<sup>1</sup>, Christele GRAS LEGUEN<sup>1</sup>, Renaud CLEMENT<sup>1</sup>, Pierre CORRE<sup>1</sup>, Caroline RAMBAUD<sup>2</sup>



### Institutions :

1. Centre Hospitalier Universitaire de NANTES, France
2. Centre Hospitalier Universitaire Raymond Poincaré, GARCHES, France

### Abstract :

**Objective:** Ogival palate (i.e., a narrow and high-arched palate) is usually described in obstructive breath disorder but has been found in infants unexpectedly deceased. We studied the association between ogival palate and sudden unexpected death in infancy (SUDI) on the basis of a computed tomography (CT) evaluation.

**Methods:** We conducted a monocentric case-control study of children under 2 years of age who died of SUDI, for which a head CT scan and an autopsy were performed between 2011 and 2018. Each case was matched by sex and age ( $\pm 30$  days) to two controls selected among living children in the same center who benefited from a

cranio-encephalic CT scan. Four parameters of the hard palate were measured by CT: height, width, length, and sagittal angle; the height/width ratio was calculated. The presence of an ogival palate was also subjectively evaluated by the radiologists, independently from the measurements. Standardized odds ratios (OR) were calculated using conditional logistic regression models, all expressed for +1 standard deviation (SD).

**Results:** Thirty-two deceased children were matched to 64 living control children. Mean ages were 5.0 and 5.3 months, respectively. Twenty-eight cases were considered to have died as a result of SIDS. The mean heights of the hard palate were significantly higher in the deceased children [4.1 ( $\pm$  0.7) millimeters (mm)] than in the living children [3.2 ( $\pm$  0.6) mm], with OR (+1SD) = 4.30 (95% confidence interval [CI], 2.04–9.06,  $P$  = 0.0001). The mean widths of the hard palate were 21.0 ( $\pm$  1.9) mm and 23.2 ( $\pm$  2.1) mm, respectively, with OR = 0.15 (95% CI, 0.06–0.40,  $P$  = 0.0001). The mean sagittal angles were significantly more acute in deceased children [134.5° ( $\pm$  9.3)] than in living children [142.9° ( $\pm$  8.1)], with OR = 0.28 (95% CI, 0.14–0.56,  $P$  = 0.0003). The mean height/width ratios were 19.8 ( $\pm$  3.7) and 14.1 ( $\pm$  3.3), respectively, with OR = 6.10 (95% CI, 2.50–14.9,  $P$  = 0.0001). The hard palate was subjectively considered as ogival in 59.4% (19/32) of the cases versus 12.5% (8/64) of the controls.

**Conclusion:** Radiological features of the ogival palate were strongly associated with SUDI. This observation still needs to be confirmed and the corresponding clinical features must be identified.