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قسم الدراسات الطبية

الموجات فوق الصوتية للغدة الدرقية في الأطفال حديثي الولادة المصريين

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Ultrasonography of the Thyroid Gland in Egyptian Neonates

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ABSTRACT

Thyroid ultrasound is a promising but relatively underused technique for thyroid imaging in newborn infants with congenital hypothyroidism.

The aim of the work was to establish reference ranges for neonatal thyroid gland ultrasonography (length, breadth, depth, and volume) in Egyptian healthy term and preterm neonates which would provide reference values with which infants with suspected thyroid anomalies could be compared. It also would be useful to compare our data with those reported in studies from other countries using the same volumetric calculation. It also would be useful to find correlations between thyroid ultrasonographic and laboratory findings in critically ill neonates.

This case-control study was conducted at NICU of Obstetric and Gynecology Hospital, Ain Shams University and NICU of El Galaa Teaching Hospital, in the period of one year from March 2007 to March 2008. It included one hundred and fifty diseased neonates as a patients group and one hundred and fifty healthy neonates of matched gestational age, postnatal age and weight as a control group.

Results: Ultrasonographic thyroid volumes revealed highly significant positive correlations with anthropometric measurements & gestational age in both groups, highly significant decrease in patients compared to controls and no significant difference among different diagnoses as regards their effects on total thyroid volumes in critically ill neonates.

Conclusion: The reference range for ultrasonographic mean thyroid volume (SD) in Egyptian healthy neonates was 0.65 ml ($\pm$ 0.33). Therefore, a thyroid gland volume outside this range on ultrasound warrants further investigations to identify any underlying pathology, especially dysmorphogenesis in case of goiter.

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LIST OF ABBREVIATIONS

Abbrev.	Meaning
ABG	Arterial blood gases
Alb	Albumin
aTSA	automatically calculated continuous trace transverse Surface area
ATP	Adenosine triphosphate
BE	Base excess
C cells	Calcitonin secreting cells (parafollicular cells)
Ca⁺⁺	Calcium
CBC	Complete blood picture
CHF	Congestive heart failure
CNS	Central nervous system
CRP	C-Reactive protein
CS	Cesarean section
CT	Computed tomography
DBP	Diastolic blood pressure
DIT	Deiodinated tyrosine
EGF	Epidermal growth factor
Epo	Erythropoietin
FT	Full term
FT3	Free triiodothyronine
FT4	Free thyroxine
GIT	Gastrointestinal tract
GRTH	Generalized resistance to thyroid hormone
HbO₂	Oxyhemoglobin
Hb	Hemoglobin
HC	Head circumference
HCo₃	Bicarbonate
HR	Heart rate

LIST OF ABBREVIATIONS (Cont....)

Abbrev.	Meaning
HSL	Hormone sensitive lipase
IGFBP-3	Insulin-like growth factor binding protien-3
IGFI	Insulin growth factor I
IQ	Intelligence quotient
IUFD	Intrauterine fetal death
K+	Potasium
LL Depth	Depth of left lobe of thyroid gland;
LL Tras	Transverse diameter of left lobe of thyroid gland
LL long	Longitudinal diameter of left lobe of thyroid gland
LL volume	Left lobe volume
MIT	Monoiodinated tyrosine
MMI	Methimazole
MRI	Magnetic resonance imaging
Na+	Sodium
NICU	Neonatal Intensive Care Unit
NIS	Sodium iodide symporter
NPV	Negative Predictive value
NTI	Non thyroidal illness
PT	Preterm
NVD	Normal vaginal delivery
Pax-8	paired –box genes 8
PC	personal computer
Pco2	Partial pressure of carbon dioxide
Plt	Platelet
Po2	Partial pressure of oxygen
PPV	Positive Predictive value
PROM	Premature rupture of membrane

LIST OF ABBREVIATIONS (Cont....)

Abbrev.	Meaning
PTU	propylthiouracil
RBS	Random blood sugar
RL depth	Depth of right lobe of thyroid gland
RL tras	Transverse diameter of right lobe of thyroid gland
RL long	Longitudinal diameter of right lobe of thyroid gland
R L volume	Right lobe volume
ROC-curve	Receiver Operating Characteristic curve analysis
RR	Respiratory rate
rT₃	Reverse triiodothyronine
SBP	Systolic blood pressure
SCM	Superior cervical muscles
SD	Standard deviation
SPSS version XI	Statistical package for social science version XI
T2	Diiodothyronine
T3	Triiodothyronine
T4	Thyroxine
TBG	Thyroxine binding globulin
TBPA	Thyroxine binding prealbumin
Temp	Temperature
Tg	Thyroglobulin
TH	Thyroid hormones
TPO	Thyroid peroxidase
TRH	Thyroid releasing hormone
TRs	Peripheral nuclear thyroid hormone receptor

LIST OF ABBREVIATIONS (Cont....)

Abbrev.	Meaning
TSH	Thyroid stimulating hormone
TT4	Total thyroxine
TTF1	Thyroid transcription factors 1
TTF2	Thyroid transcription factors 2
TTR	Transthyretin
TV	Total thyroid volume
US	Ultrasound
UTI	Urinary tract infection.
WBC	White blood cells

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