Method for determining thyroid size by ultrasonography

Longitudinal and transverse scans are performed allowing the measurements of the depth (d), the width (w) and the length (l) of each lobe. The volume of the lobe is calculated by the formula:

\[ V \text{ (ml)} = 0.479 \times d \times w \times l \text{ (cm)}. \]

The thyroid volume is the sum of the volumes of both lobes. The volume of the isthmus is not included.

Thyroid volume can be easily calculated using a calculator or personal computer during data entry. Portable ultrasound equipment is relatively rugged, but requires electricity. However, it can be operated from a car battery with the aid of a transformer. Trained operators can perform up to 100 or more examinations per day.

The body surface area is calculated using the formula of Dubois and Dubois (Archives of Internal Medicine, 1916, 17:863):

\[ \text{BSA (m}^2) = W^{0.425} \times H^{0.725} \times 71.84 \times 10^{-4} \]

It should be emphasized that by using the ultrasonographic criteria, a thyroid gland will be called goitrous when its values will be above the 97th percentile of the volume found in an iodine replete population used as control.

Normal values for the median and 97th percentile for thyroid volume, as a function of both age and body surface area (BSA), are being developed. In areas with a high prevalence of protein-energy malnutrition, the BSA reference is recommended.