Introduction

A broad variety of tumors can involve the small, circumscribed orbit. Two thirds of the lesions are benign and one third is malignant. The proportion of malignant tumors, e. g. metastases and lymphomas, increases with age. In childhood dermoid cysts and hemangiomas are commoner [1].

Ultrasonography is highly informative, non-invasive and poses no risk on the patient, therefore may be repeatedly performed in order to evaluate treatment effectiveness or disease progression. This method may not require narcosis for children as it is painless and does not take long [2].

Ophthalmic ultrasonography employs high-frequency sound waves that provide the high resolution required for ocular diagnosis. A lower frequency of 8 MHz is used to obtain the penetration needed to reach the orbital apex. The orbit is evaluated with A- and B-mode scanning [3].

Standardized A-scan ultrasonography provides unidimensional images of the orbital soft tissue characterized by a series of spikes of varying height and width that demonstrates the echogenic characteristics of each tissue. Two dimensional images of these tissues can be obtained with B-scan ultrasonography [4].

B-mode real time ultrasonography with high frequency probes provides non-ionizing technique cost-effective, non-radiation, non-invasive technique which can be performed in outdoor patient without any use of anesthetics or sedative therapy [5].

The acoustic inner texture of an orbital lesion can be correlated with its histologic features. The contents of a normal orbit and lacrimal fossa show high reflectivity and marked sound attenuation owing to the presence

of large collagenous connective tissue septae, fat globules, blood vessels, and nerves. Most orbital pathologies display less coarse and heterogeneous structures than the normal orbit, hence, usually have lower reflectivity. This is in contrast to intraocular pathology, which usually shows higher reflectivity than the normal standard baseline displayed by the clear vitreous body [3].

Color Doppler imaging is a non-invasive ultrasound procedure which permits simultaneous gray scale imaging of structure and color-coded imaging of blood velocity. This improved technique allows the user to identify even very small blood vessels, such as those supplying the eye, from which measures of blood velocity and vascular resistance can be obtained [6].

Color Doppler imaging (CDI) is a useful adjunctive imaging study for evaluating the vascularity of orbital tumors. The absence or presence of intratumoral blood flow as demonstrated by CDI can help determine the nature of the orbital mass and can assist with surgical planning [7].

In addition, color Doppler ultrasound may localize vasculature for surgical planning, guide endovascular or percutaneous embolization, and evaluate radiation treatment efficacy in high-flow malignant lesions [8].