

## Review Article

# BONE TUMORS: MORPHO-BIOLOGIC AND EVOLUTION GUIDELINES BEFORE ANATOMOPATHOLOGICAL EXAMS

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## Abstract

Bone tumors represent an ongoing challenge for the physician, who can remain in control of the disease only by means of comprehensive knowledge of clinical presentation, evolution, staging, pathology and possible responses to treatment. Although some malignant bone tumors are life-threatening, for many types the average outcome has improved due to the application of adjuvant chemotherapy and limb reconstruction. Survival rates for reconstruction associated with chemotherapy can now match those for radical amputation. The development and improvement of staging systems, based on biological activity and the extent of tumor invasion, allow the physician to select the most effective treatment program.

The aggressiveness of a tumor can be measured by its mitotic activity, its degree of cellular differentiation and the amount of necrosis. This histopathological grading best reflects the tumor's biological activity, its prognosis and guides the choice of treatment; it is the key to an effective treatment.

**Keywords:** *benign bone tumor, malignant bone tumor, staging*

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## Rezumat

Tumorile osoase reprezintă o continuă provocare adresată medicului, în care acesta poate controla situația numai printr-o cunoaștere completă a aspectelor clinice, evoluției naturale, stadiilor de evoluție, histopatologiei și răspunsului la tratament.

Deși unele tumori osoase maligne constituie o amenințare asupra vieții, prognosticul multora din ele s-a îmbunătățit în condițiile aplicării unei chimioterapii adjuvante sau în urma asocierii chimioterapiei cu procedee de reconstrucție, obținându-se rate ale supraviețuirii altădată posibile doar prin amputații radicale.

Dezvoltarea și îmbunătățirea actuală a sistemului de stadializare, având la bază activitatea biologică și extinderea tumorii, au permis aplicarea de către medic a mai multor scheme terapeutice eficiente.

Comportamentul agresiv al tumorilor poate fi demonstrat prin activitatea mitotică histologică a tumorii, gradul de diferențiere celulară și /sau gradul necrozei tisulare. Acest „grading” histologic reflectă cel mai bine activitatea biologică a tumorii, prognosticul și indică cele mai bune modalități de tratament, reprezentând cheia unui tratament eficient.

**Cuvinte-cheie:** *tumoră osoasă benignă, tumoră osoasă malignă, stadializare*

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## Generalities

Tumors are masses of newly formed tissue that form by abnormal cellular proliferation. This pathological pattern of growth exceeds the development rate of normal tissue and persists after the disappearance of inductive factors; thus, tumors are said to be biologically autonomous from the body.

Unlike cell proliferation in inflamed and regenerating tissue, which is integral to the processes of defense and adaptation, tumor proliferation is primitive, unbounded and not only useless, but actively damaging to the body. This observation is first attributed to Galen, who distinguished physiological, inflammatory or reparatory swellings from those “against nature”, where he included tumors. The term “tumor” comes from the Latin word *tumor*, which defined any type of swelling, regardless of its nature – neoplastic, inflammatory, hyperplastic or vascular.

Today, the word tumor is a synonym for neoplasia (from Greek *neos* – new, and *plaxis* - growth), and defines the development of tissue featuring new characteristics, different from the ones of the host organism (Ackerman, 1964; Robbins, 1974).

Bone tumors are an important group of lesions that, because of their variability, incidence and severity, represent an important part of children’s surgical pathology. Some are malignant, others are benign, and some can regress spontaneously [15] (*Figure no. 1*). Rarely, tumors can have both malignant and benign features, so-called “borderline” tumors [6,13] (*Figure no. 2*).