Summary

Introduction: Non-functioning pituitary adenomas (NFPAs) are regarded as benign, slowly growing tumours of the sella turcica region. Their growth is generally constantly exponential; however, rapid and aggressive proliferation is not the exception, especially in young patients.

Treatment involves surgical removal. In literature, the role of postoperative irradiation of the residual tumour is controversial.

Aim: The aim of this study was to investigate the natural growth patterns of NFPAs and attempt to identify the factors affecting their growth potential. As part of the study, nuclear marker Ki-67 was tested as a possible reliable indicator of adenoma proliferation, as well as it's role as a potential marker of postoperative remnant's growth potential. This would enable the identification of serious rapid growth in cases of tumour recurrence.

Material: Our study is based on 105 patients operated for NFPAs between years 2000-2007. The fixed inclusion criteria of the study (a postoperative residue detected by 2 graphic examinations, absence of adjuvant therapy and the imunohistochemical determination of the proliferation marker) were fulfilled by 29 patients (22 men, 3 women). The average age of the patient group was 62.9 years. By large, the tumours were afunctional macroadenomas with gonadotrophin expression (90 %). The extent of full surgical radicality based on postoperative MRi investigations was approximately 75 % and decreased with the number of operations.

The limiting factor of radicality of resection was not tumour consistency (p=0,36). Factors such as sex, presence of a cyst in the adenoma or invasive growth did not prove to have any significant effect on the level of radicality.

Growth curves constructed on the basis of measured postoperative remnant volumes proved a statistically significant dependence of rate of growth on patient's age (TVDT – tumour volume doubling time). In both groups, younger and older than 61 years of age, similar growth curves were observed with the exception of occasional rapid volume progression in younger patients.

A correlation between rate of growth and the Ki-67 proliferation index was not found. Similarly no statistically significant relationship between rate of growth, tumour invasiveness, sex and presence of a cyst on preoperative MRi was found. Invasivity was not connected to higher Ki-67 proliferation index values.

Conclusion: Based on the results of our study the following conclusions can be made: the rate of NFPAs growth depends on patient age (the rate of proliferation decreases with age), this fact is useful in treatment strategy as well as postoperative monitoring. The Ki-67 proliferation marker, well-established in human oncology, cannot be considered to be a reliable predictive marker of NFPAs growth in our recent study.