Profile of the glycosaminoglycans and proteoglycans in medullary thyroid cancer

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Medullary thyroid cancer (MTC) may occur as sporadic form or associated with familial multiple endocrine neoplasia type 2A and 2B (MEN 2A and 2B). In familial syndrome, various autosomal dominantly inherited mutations of the RET receptor tyrosine kinase have been directly implicated in the pathogenesis of MTC. Although uncommon, its treatment remains a major challenge for medicine. In clinical practice has been noted that even within the same family with MEN, different behaviors can be observed, suggesting that besides the type of mutation, the microenvironment (tumor stroma) could be modulating tumor development and progression. Among these components, glycosaminoglycans (GAGs) and proteoglycans (PGs) play a pivotal role in carcinogenesis by influencing tumor growth, aggressiveness, progression and ability to metastasize. Therefore, we assessed the involvement of PGs/GAGs in this tumor by comparing their expression in MTC cell line (TT cells) and fragments of neoplastic tissues. While TT cells synthesize predominantly heparan sulfate (HS), fragments of tumors produce a higher concentration of chondroitin sulfate (CS). In addition, TT cells synthesize decorin, biglican, syndecan-3 and do not express versican. On the other hand, tumor tissues synthesize mainly CS and express, by immunofluorescence, syndecan-3 and versican with a wide range of spectrum when comparing sporadic carcinomas and tumors from patients with different kind of mutations. This new knowledge can bring profound impact on the management of this disease, either for the follow up after surgery or to development of new therapeutic tools.

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