CHEMoresistance MARKers PGP and BCRp in Canine inflammatory and grade 3 mammary carcinoma

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The following work has been done during a period of 4 months of research exchange at the Department of Animal Medicine, Surgery and Pathology of the Complutense University of Madrid, Spain and is going to be presented at the Joint European Congress of the ESVP, ECVP and ESTP Lyon, France, August 30 – September 02, 2017.

Introduction: Multidrug resistance of neoplastic cells is frequently related to the expression of P-glycoprotein (PGP) and Breast Cancer Resistance Protein (BCRP). Canine inflammatory mammary carcinoma (IC) and grade 3 carcinoma (C3) are biologically aggressive and they could benefit from chemotherapy. Our study describes the expression of PGP and BCRP in these tumours.

Materials and Methods: Samples included 18 C3s and 20 ICs from dogs that had not received chemotherapy before biopsy. Primary carcinoma was available in 15 IC cases. Tumours were classified into histological subtypes. IHC for PGP and BCRP was considered positive when >20% and >10% of cells were labelled for PGP and BCRP, respectively.

Results: Immunolabelling was mainly membranous for PGP showing a strong reaction in emboli; membranous and cytoplasmatic stain was mainly seen for BCRP. PGP was highly expressed in the different tumours, but significantly higher in emboli of IC vs C3 (PGP P=0.008) and in primary IC vs C3 (PGP P=0.032). There was no significant difference in BCRP expression among groups, being expressed in 78.95% of emboli of IC, 80% of primary IC and 66.67% of C3.

Conclusions: Chemoresistance is a phenomenon present in dogs with C3 and IC. Our results indicate the need of a combined therapy rather than chemotherapy alone. The high expression of PGP in ICs compared with non-inflammatory mammary carcinomas is an interesting finding that can explain a higher resistance to chemotherapy in this type of cancer and could be related to the specific pathogenic mechanisms that this disease exhibits.