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Implication of matrix metalloproteinases 9/2 and nitric oxide in the development of breast cancer: Correlation with clinicopathological parameters

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Introduction: Many studies have demonstrated that nitric oxide (NO) plays a significant role in the multistep processing of carcinogenesis in breast cancer patients. These steps involve many inflammatory mediators like matrix metalloproteinases, in particular MMP-9 and 2.

Aim: The aim of the present study was to investigate the activity levels of MMP9/2 and NO in breast cancer patients.

Methods: MMP activities were assessed by a zymographic analysis in the sera of 125 patients carrying breast tumors and 20 healthy subjects as well as 63 breast tumors. Moreover, NO activity was investigated in the same samples by an enzymatic method. The results obtained were then correlated with the clinicopathological parameters. Moreover, immuno-histochemical staining was performed to analyze the tissue expression of CD68 (marker of infiltrating macrophages), uNOS (universal NO synthases), and NF- κ B.

Results: The activities of MMPs and NO increased significantly in breast cancer patients compared with control subjects. Moreover, these activities were higher in patients with malignant tumors than in those with benign tumors both in sera and biopsy. They also correlate with tumors' size, type, stage, metastasis, and tissue expression of uNOS, CD68 and NF- κ B.

Conclusion: Our results showed an association between high activities of MMPs (particularly MMP9) and NO and the development of breast malignant tumors. Interestingly, the serum MMP and NO level reflect the tissue levels. These findings suggest that serum levels of these molecules may be useful as markers in monitoring breast carcinoma patients

Biography

Manel Amri is a Teacher-Researcher at the University of Sciences and Technology Houari Boumediene (USTHB), Algiers, Algeria. She is a member of research group directed by Pr. Touil - Boukoffa C. The aim of her project is about the implication of cytokines and nitric oxide in immunological responses in infectious diseases: Hydatidosis. Her specialties include Biochemistry, Immunology, Molecular Biology and Biotechnology.

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