Differential Protein Expression in Small Intestinal Carcinoids and Liver Metastases


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BACKGROUND/AIMS

- Small intestinal carcinoids often have heterogeneous behavior that may present clinical challenges.
- Often detected incidentally on cross-sectional imaging as well as in symptomatic patients; these lesions may present with different biologic behavior.
- Because of our limited understanding of the natural history of these lesions, it would be helpful to understand important pathways in tumor growth and metastasis development.
- Investigators at our institution have recently developed a proteomic based approach, termed Protein Pathway Array (PPA), which allows global screening of changes in protein expression and post-translational phosphorylation.

METHODS (cont.)

- Extracted proteins were separated on an SDS gel and blotted on a multichannel manifold with 136 antibodies.
- Positive bands were identified and band densities were determined using BioRad Image system.
- Significant Analysis of Microarray (SAM) was used to select the proteins differentially expressed between different groups.

RESULTS (cont.)

- At the 136 proteins analyzed, 52 proteins were expressed in these samples.
- 9 proteins were up-regulated in primary SICs compared with matched normal small bowel mucosa (Table 1).
- Cyclin E was downregulated in primary SIC tissue compared to normal small bowel mucosa.
- Compared to normal liver tissue, SIC liver metastases demonstrated up-regulation of P-ERK and p27 but down-regulation of CD2 and CD25B.
- Curiously, when comparing primary SIC with their paired liver metastases, cyclin E demonstrated a significant upregulation in the liver metastasis.

RESULTS

- Few studies have compared gene or protein expression in primary and metastatic SIC tumors rescued simultaneously.
- Our findings suggest Protein Pathway Array reveal changes in a limited number of proteins, suggesting that these may be targets for therapy.
- Future studies are needed to validate these findings.

REFERENCES

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- K2 Career Development Award

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- Mount Sinai School of Medicine

METHODS

PATIENTS: Patients undergoing surgical resection of SICs with metastases to liver

TISSUES: Tissue from liver metastasis, paired primary SIC compared to matched tissue controls from same patient of normal liver and normal small intestine