microRNA-21 and Its Emerging Role in Tumor Progression in Systemic Malignancies

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To the editor:

The recent article by Ozgün et al. [1] provided for highly interesting reading. MicroRNA-21 (miR-21) may contribute to tumor progression and prognosis in a number of other gastrointestinal malignancies.

For instance, similar effects are seen in colorectal malignancies. It regulates TGFβR2 signaling in the malignant colonic tissue [2]. As a result, it modulates cancer stem cell function in colon tissue. Typically, miR-21 expression is accentuated in malignant colonic tissue [3]. An inverse relationship exists between miR-21 expression and the expression of Sprouty2 protein in the colonic cancerous cells [4]. miR-21 also modulates Cdc25A function and thereby further contributes to tumor progression in colorectal malignancies [5]. miR-21 also has a negative impact on PDCD4 mRNA levels within the cancerous cells [6]. Subjects with stage II colon cancer with accentuated miR-21 expression within the colonic stroma tend to have decreased disease free survival [7]. A similar negative impact is seen on overall survival. Interestingly, the anti-proliferative effects of chemotherapeutic agents such as 5-fluorouracil is markedly accentuated secondary to the

modulatory effects of miR-21 on the expression of Sprouty2 protein [8]. Increased PTEN expression is also seen.

A similar impact is seen in gastric malignancies. miR-21 expression is typically accentuated in gastric carcinomas. This in turn results in decreased expression of Serpin1 [9], which augments tumor progression. Cancer cell migration is also enhanced at the same time. In addition, PTEN expression is altered by miR-21 [10] and miR-21 down-regulates PDCD4 expression and thereby contributes to tumor progression and evolution. Not surprisingly, a significant association exists between tumor differentiation and miR-21 expression in gastric tumors [11]. A similar relationship is seen between the TNM stage and the miR-21 levels in circulating tumor cells [12].

It is obvious from the above examples that miR-21 plays a major role in tumor progression in gastrointestinal malignancies.

Disclosure Statement

The author declares no conflicts of interest.

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