Angiomyolipoma with medical and surgical perspective

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Introduction: The angiomyolipoma of renal origin is a rare benign tumor composed of fat cells, smooth muscle cells and thick-walled blood vessels. Mostly these are sporadic origin asymptomatic and benign in nature.

Case series: Here we are presenting a case series of renal angiomyolipoma (AML) presenting as fever, pain, perirenal hematoma and frank hematuria. After initial stabilization evaluated by contrast enhanced computer tomography and diagnosed as renal angiomyolipoma because of low Hounsfield areas (10-20HU) suggestive for fat. Patient later underwent angiography which showed multiple aneurysmal dilations, arteriovenous fistulae and actively bleeding vessels were identified and controlled with selective angiembolisation. Post intervention period was uneventful and was treated by an oral Everolimus 10 mg daily for a period of 1 year in first case and partial resection was done in second case. On two year follow-up both patient were doing well and had normal renal function without any recurrence.

Conclusion: Embolization is the emergency treatment of choice for bleeding angiomyolipoma. When preventive treatment is considered a nephron-sparing approach either by transarterial embolization or partial nephrectomy is clearly important. While angiomyolipoma in both kidneys or in solitary functioning kidneys, renal preservation is mandatory in order to avoid need for renal replacement therapy. Also recently approved drug Everolimus may be considered for patients not suitable for surgery particularly in tumour seen with tuberous sclerosis.

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The PI3K/AKT/mTOR pathway in gastric cancer and its potential relationship with miR-125b, miR-451 and miR-101


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Gastric cancer (GC) is associated with aberrant expression of miRNAs and deregulation in signaling pathways. We perform in silico predictive analysis to know which miRNAs could be regulating the PI3K/AKT/mTOR pathway and could play an important role in the development of GC. We found that miR-125b, miR-451 and miR-101 could target the mRNA of PI3K and AKT (miR-125b), TSC1 (miR-451) and mTOR and PI3K (miR-101), all members of this pathway. The aim of this study was to evaluate the transcriptional and protein expression of the most important components of PI3K/AKT/mTOR pathway in tissues and GC cell lines and associate their expression with the expression of miR-125b, miR-451 and miR-101.

Methods: The expression of PI3K, AKT, PTEN, TSC1, mTOR, P70S6K1, 4E-BP1 and eIF4E genes and expression of miR-125b, miR-451 and miR-101 were analyzed in 25 advanced GC tissues and their 25 paired non-tumor tissues (NT) and in AGS, MKN28 and MKN45 GC cell lines by qRT-PCR. The protein expression of PI3K/AKT/mTOR was performed by IHC in TMA of 142 gastric tissue samples (71 advanced GC and 71 paired non-tumor tissues). The proteins studied were PI3K, PTEN, AKT, phospho-AKT, mTOR, phospho-mTOR, phospho-mTOR, p70S6K, phospho-p70S6K, phospho-4E-BP1, phospho-eIF4E, eIF4E and phospho-eIF4E. Clinical and pathological data of patients was used.

Results: Increased protein expression was found by IHC for PI3K, AKT, phospho-AKT, mTOR, phospho-mTOR, P70S6K1, 4E-BP1, eIF4E and phospho-eIF4E in tumor tissues compared with non-tumor tissues (p<0.05). Conversely, levels of PTEN were higher in non-tumor tissues (p<0.001). Moreover, Kaplan-Meier analysis showed a poor survival in those patients with low expression of 4E-BP1 (p=0.03). The gene expression of PI3K, AKT, P70S6K1 and eIF4E in tumor tissues compared with non-tumor tissues (p<0.05). Conversely, levels of PTEN were higher in non-tumor tissues (p<0.001). Moreover, Kaplan-Meier analysis showed a poor survival in those patients with low expression of 4E-BP1 (p=0.03). The gene expression of PI3K, AKT, P70S6K1 and eIF4E in tumor tissues compared with non-tumor tissues (p=0.05). Conversely, levels of PTEN were higher in non-tumor tissues (p<0.001). Moreover, Kaplan-Meier analysis showed a poor survival in those patients with low expression of 4E-BP1 (p=0.03). The gene expression of PI3K, AKT, P70S6K1 and eIF4E in tumor tissues compared with non-tumor tissues (p<0.05). Conversely, levels of PTEN were higher in non-tumor tissues (p<0.001). Moreover, Kaplan-Meier analysis showed a poor survival in those patients with low expression of 4E-BP1 (p=0.03). The gene expression of PI3K, AKT, P70S6K1 and eIF4E in tumor tissues compared with non-tumor tissues (p<0.05). Conversely, levels of PTEN were higher in non-tumor tissues (p<0.001). Moreover, Kaplan-Meier analysis showed a poor survival in those patients with low expression of 4E-BP1 (p=0.03).

Conclusion: This study has shown that PI3K/AKT/mTOR pathway is activated in tumor tissues of GC and these data could help us to validate this pathway as a potential therapeutic target for this malignancy. Moreover, miR-125b, miR-451 and miR-101 have association with the expression of some members of the PI3K/AKT/mTOR pathway. This relationship could be important in order to modulate the behavior of this pathway during carcinogenesis. However, further studies are necessary to confirm the direct interplay between these miRNAs and the PI3K/AKT/mTOR pathway.

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