

# ROLE OF ALPHA FETOPROTEIN SCORE AND AURORA B KINASE IN PREDICTION OF HEPATOCELLULAR CARCINOMA RECURRENCE AFTER MICROWAVE ABLATION.

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## INTRODUCTION

Microwave ablation (MWA) is one form of local thermal ablation which is a strikingly new promising technique for HCC treatment. The high recurrence rate after HCC treatment is the main cause of the dismal prognosis.[1] It was reported that AFP Score has a predictive value for detection of HCC recurrence after liver transplantation.[2] It was also noted that aberrant expression of Aurora B kinase in HCC has a predictive value for HCC recurrence after curative hepatectomy.[3]

## AIM

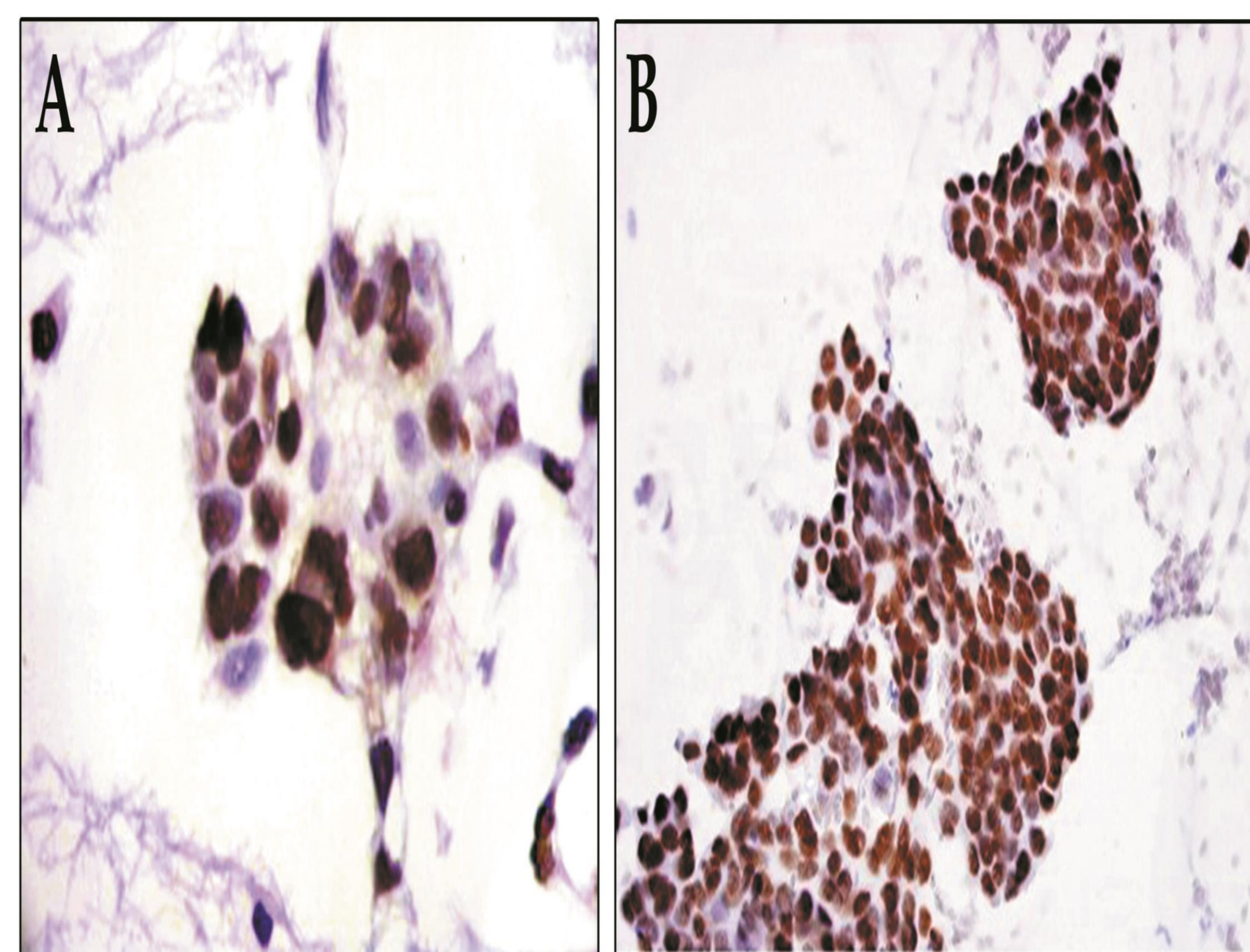
We aimed at investigating the predictive value of Alpha fetoprotein (AFP) score and Aurora B kinase (AURKB) in HCC recurrence after MWA.

## METHOD

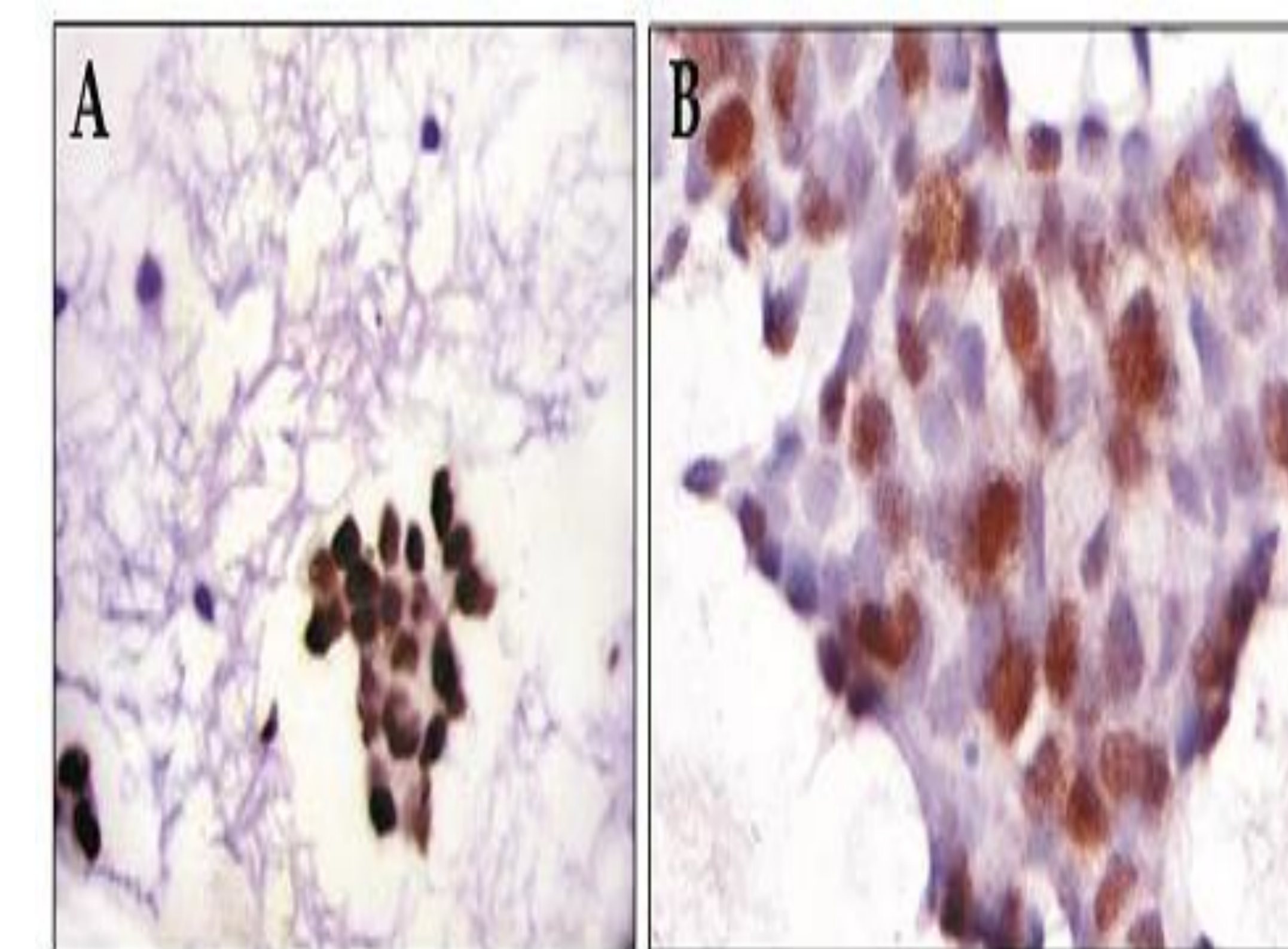
A cross-sectional study where 25 early-stage HCC patients (Barcelona Clinic Liver Cancer 0/A-B) were treated with MWA. Tumor biopsies were obtained just prior to MWA and assessed for WHO pathological grade and AURKB expression by immunohistochemistry. AFP score was calculated based on tumor size, number of nodules and AFP values with a cut-off value of 2 classifies patients into high and low risk of recurrence.[2] After achieving complete ablation, patients were followed every 3 months for 1 year by triphasic CT to detect recurrence.

## RESULTS

- AFP score was significantly lower among patients who achieved complete ablation compared to patients with recurrence. ( $\chi^2=9.0$ ,  $p=0.003$ ).
- There was a significant positive correlation between AFP score and the pathological grade of the tumor ( $r=0.467$ ,  $p=0.019$ ).
- AURKB was over-expressed in tumoral (Figure 1B) more than non-tumoral specimens (Figure 1A) ( $p<0.001$ ).
- AURKB was correlated with the size of the tumor, the number of nodules and the pathological grade of the tumor.(Figure 2A,2B)
- There was no significant difference of Aurora B kinase expression among patients who achieved complete ablation and patients with recurrence ( $p=0.869$ ).



**Figure 1:** Comparison of Aurora B kinase expression between HCC tissue and non-tumoral liver tissue smears. (A) Aurora B kinase staining in grade II HCC. Note the nuclear staining pattern. (Aurora B kinase antibody, streptavidin peroxidase technique, x 200). (B) Aurora B kinase antibody staining in non tumoral cirrhotic liver smears. Note the positive nuclear staining observed in several tumor cells seen in this cluster of reactive hepatocytes. (Aurora B kinase antibody, streptavidin peroxidase technique, x 400).



**Figure 2:** Comparison of Aurora B kinase expression between grade II HCC and grade III HCC. (A) Aurora B kinase staining in grade II HCC. Note the nuclear staining pattern (Aurora B kinase antibody, streptavidin peroxidase technique, x200). (B) Aurora B kinase staining in grade III HCC showing intense nuclear positivity (Aurora B kinase antibody, streptavidin peroxidase technique, x400).

## CONCLUSIONS

- AFP score can effectively predict the response to MWA among HCC patients.
- It can also bring up more information about the tumor behavior, making the identification of aggressive tumors possible, even with reasonable tumor size and number.
- Aurora B kinase can be used as a biomarker for aggressiveness of HCC tumor (larger size, multinodularity and high grade) but not to be used for prediction of HCC recurrence after microwave ablation.

## REFERENCES

1. Portolani N, Coniglio A, Ghidoni S, et al. Early and late recurrence after liver resection for hepatocellular carcinoma: prognostic and therapeutic implications. *Ann Surg* 2006; 243(2):229-35.
2. Duvoux C, Roudot-Thoraval F, Decaens T, et al. Liver transplantation for hepatocellular carcinoma: a model including alpha-fetoprotein improves the performance of Milan criteria. *Gastroenterology* 2012; 143(4):986-94.
3. Tanaka S, Arii S, Yasen M, et al. Aurora kinase B is a predictive factor for the aggressive recurrence of hepatocellular carcinoma after curative hepatectomy. *Br J Surg* 2008; 95(5):611-9.

## ACKNOWLEDGEMENTS

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