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EFFICACY AND SAFETY OF MICROWAVE ABLATION FOR TREATING REFRACTORY SECONDARY HYPERPARATHYROIDISM IN PATIENTS UNDERGOING MAINTENANCE HEMODIALYSIS

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INTRODUCTION: Secondary hyperparathyroidism (SHPT), inducing a series of clinical symptoms such as high parathyroid hormone, disorders of calcium-phosphorus metabolism, parathyroid hyperplasia, renal osteodystrophy, and cardiovascular calcification, is one of the main complications of end-stage renal disease requiring dialysis therapy, which is associated with increased mortality and decreased life quality[1-3]. Administration of vitamin D and its analogues is the classical treatment for early SHPT, whereas parathyroidectomy is the standard therapy for severe drug-resistant SHPT[4-6]. As a minimally invasive form of treatment, microwave ablation (MWA) has been increasingly used to treat SHPT[7-9]. However,

the efficacy and safety of microwave ablation for refractory secondary SHPT is not conclusive. Secondary hyperparathyroidism (SHPT) is one of the main complications of end-stage renal disease requiring dialysis therapy, which is associated with increased mortality and decreased life quality. Administration of vitamin D and its analogues is the classical treatment for early SHPT, whereas parathyroidectomy is the standard therapy for severe drug-resistant SHPT. As a minimally invasive form of treatment, microwave ablation (MWA) has been increasingly used to treat SHPT. This article is to confirm the efficacy and safety of microwave ablation for refractory secondary SHPT.

METHODS: The 33 maintenance hemodialysis patients with SHPT (follow-up for three months after MWA) were divided into the response group (n=24) and the non-response group (n=9). The efficacy (serum intact parathyroid hormone (iPTH), calcium, and phosphorus levels) and safety (hoarseness, hypocalcaemia, and persistently low iPTH) were analyzed. Additionally, we explored the potential predictors of the efficacy and safety of MWA by logistic regression analysis.

RESULTS: The rates of achieving the recommended goal for iPTH were 57.58% at 1-day, 45.45% at 1-week, 57.58% at 2-week, 57.58% at 1-month, and 69.70% at 3-month, respectively. The similar findings were also demonstrated in phosphorus and calcium. Baseline level of iPTH ($p=0.021$) and patient age ($p=0.011$) were determined as predictors by univariate logistic regression analysis, but baseline iPTH level was negated by multiple logistic regression analysis ($p=0.186$). No patients developed hoarseness or persistently low iPTH. The incidence of hypocalcaemia was 45.5%, which was associated with the baseline iPTH level ($p=0.041$).

CONCLUSIONS: The MWA is efficacy and safety to treat refractory SHPT in patients with maintenance hemodialysis, and the treatment response may be associated with baseline iPTH level and patient age.