بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / مني مغربي أحمد

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

Safety and efficacy of image guided thermal ablation of painful metastatic bone tumors

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List of abbreviations

ASU	Ain shams university
CA	Cryoablation
CT	Computed tomography
Fig.	Figure
GHz	giga hertz
HCC	Hepatocellular carcinoma
INR	International normalized ratio
IQR	Interquartile range
kHz	Kilo hertz
LA	Laser ablation
MHz	mega hertz
MRgFUS	magnetic resonance-guided focused ultrasound
MRI	Magnetic resonance imaging
MW	Microwave
MWA	Microwave ablation
No.	Number
NRS	Numerical rating scales
NSAIDs	Nonsteroidal anti-inflammatory drugs
OPG	osteoprotegerin
QOL	quality of life
r	radius
RANK	Receptor activator of nuclear factor kappa-B
RANKL	Receptor activator of nuclear factor kappa-B ligand
RF	Radiofrequency
RFA	Radiofrequency ablation
RTOG	Radiation Therapy Oncology Group
SD	Standard deviation
T	Temperature
TACE	trans arterial chemoembolization
TAE	trans arterial embolization
TNF	Tumor necrosis factor
US	Ultrasound
VAS	Visual analogue scales
VDS	Verbal descriptor scales
WHO	World health organization

INTRODUCTION

Introduction

Skeletal metastases are the most common malignant bone tumors, occurring in 30% to 70% of all cancer patients. Breast, prostate, and lung cancers are the major sources of bone metastases (Choi and Raghavan 2012).

Skeletal metastases are the most common cause of severe pain among patients with cancer. Bone pain remarkably compromises the patient's quality of life. The pain can be caused by periosteal stretching secondary to tumor growth, release of chemical mediators by tumoral cells, osteolysis, micro- and macrofractures, spinal cord compression, entrapment and nerve root infiltration, and/or compression caused by weakening of bone by tumor growth (Pusceddu et al. 2013).

Current treatment for patients with bone metastases are primarily palliative and include localized therapies (radiation and surgery), systemic therapies (chemotherapy, hormonal therapy, radiopharmaceuticals, and bisphosphonates) and analgesics (opioids and non-steroidal anti-inflammatory drugs) (Callstrom et al. 2006).

Irradiation therapy may be effective for relieving pain. However, about 20–30% of patients with painful metastatic bone tumors do not respond to external irradiation therapy. In addition,

the recurrence rate of pain following external irradiation therapy is reportedly 27%, and additional irradiation is difficult due to dose limits for normal structures (Kojima et al. 2006).

Nonresponsive tumors may instead undergo percutaneous ablation using different techniques, all of which aim to achieve thermal necrosis. These include radiofrequency ablation (RFA), microwave ablation (MWA), cryoablation (CA), laser ablation (LA), and magnetic resonance-guided focused ultrasound (MRgFUS) ablation (Gennaro et al. 2019).

Radiofrequency ablation (RFA) utilizes a high-frequency alternating current that is passed from the needle electrode into the surrounding tissue, resulting in frictional heating and necrosis (Goetz et al. 2004).

Microwave energy radiates into the tissue through an interstitial antenna that functions to couple energy from the generator power source to the tissue. As a result of the radiation energy emitted from the antenna, direct heating occurs in the adjacent tissue volume with subsequent tumor destruction (Pusceddu et al. 2013).

AIM OF WORK

Aim of work

The aim of the present study is to evaluate the technical success, effectiveness (regarding pain palliation), and possible complications of thermal ablation (RFA or MWA) in patients with painful bone metastases.

ANATOMY