

Editorial

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Chinese expert consensus on composite ablation system for the treatment of primary liver cancer (2023 edition)

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INTRODUCTION

Primary liver cancer, including hepatocellular carcinoma (HCC), cholangiocarcinoma, and hepatocellular-cholangiocellular mixed-type carcinoma, ranks fourth in the incidence of malignant tumours and second in cancer-related deaths in China^[1,2]. In this guideline, the term “liver cancer” specifically refers to hepatocellular carcinoma, which accounts for 75% to 85% of cases^[3].

Local ablation therapy for liver cancer is a local treatment method that directly eliminates tumours using physical or chemical means^[4,5]. This includes methods such as microwave ablation, radiofrequency ablation, laser ablation, high-intensity focused ultrasound ablation, cryoablation, irreversible electroporation, percutaneous ethanol injection, and percutaneous acetic acid injection. Early-stage liver cancer can often be completely cured through direct ablation, while mid-stage liver cancer typically requires a comprehensive treatment strategy combining local ablation with transcatheter arterial chemoembolization, among other techniques^[6-8].



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CONSENSUS

The composite ablation system, also known as “Co-Ablation System,” is a revolutionary approach that marries the advantages of cryoablation and thermal ablation in one system. This innovation has garnered significant attention and represents a promising avenue for the treatment of primary liver cancer. Its versatility and unique attributes make it particularly appealing. The Composite Ablation System holds a pivotal advantage in its extensive temperature control spectrum, spanning from an ultra-low -196 to a high 80 °C. This unique feature not only facilitates quicker treatment cycles but also enhances tumour destruction efficacy, distinguishing our method from other locoregional therapies. By amalgamating the benefits of both thermal and cryo-ablation, this broad temperature range enables comprehensive tumour destruction, mitigates the risk of haemorrhage, maximizes the release of tumour antigens post-tumour necrosis, and subsequently boosts immune system activation^[9-12]. This, in turn, helps to control the recurrence and metastasis of liver cancer effectively, as well as holds promising prospects for its combination with immunotherapy. Furthermore, the system provides several noteworthy advantages:

1. Achieves comprehensive tumor destruction with minimized intraoperative pain, rendering it suitable for elderly and high-risk patients.
2. Enables real-time imaging monitoring, ensuring clear treatment boundaries and high safety.
3. Offers low-cost, readily available consumables, promoting widespread utilization.

In recent years, the Co-Ablation System has been widely used in the treatment of solid tumours, including lung cancer, liver cancer, kidney cancer, pancreatic cancer, and others. Its clinical efficacy and safety have been validated. To further standardize the application of the Co-Ablation System in the treatment of primary liver cancer, the committee of minimally invasive therapy in oncology and the committee of ablation therapy in oncology of the Chinese anti-cancer association organized experts in the field of liver cancer ablation therapy to develop this expert consensus.

Clinical applications and considerations of the composite ablation system

The Composite Ablation System has found application not only in liver cancer but also in the treatment of other solid tumours, including lung cancer, kidney cancer, pancreatic cancer, and others. Its clinical efficacy and safety have been demonstrated through extensive use.

Clinical consideration and patient selection are crucial when using the Composite Ablation System. It is primarily suitable for single tumours with a diameter of less than 5 cm and multiple tumours (up to 3 lesions) with a maximum diameter of less than 3 cm. Proper patient evaluation, including an assessment of liver function, is essential to determine candidacy for this treatment.

Preparation and procedure

Before the procedure, meticulous planning is necessary. This includes selecting the appropriate anaesthesia method based on tumour size and location. While local anaesthesia may suffice for some cases, others may require general anaesthesia. Maintaining aseptic conditions throughout the procedure is vital to prevent infections.

The Composite Ablation procedure itself involves precise targeting of tumours through percutaneous punctures guided by ultrasound or Computed Tomography (CT). Care must be taken to avoid damaging major blood vessels and bile ducts during needle insertion. The procedure typically comprises cycles of

freezing and thawing to ensure thorough tumour destruction.

Post-procedure care and complications

Following the Composite Ablation procedure, patients require post-operative care, including monitoring of vital signs, liver function, and other parameters. Complications, although relatively rare, can occur. These may include fever, liver area pain, fatigue, and poor appetite, which can usually be managed with appropriate symptomatic treatment.

Specific complications, such as infection at the ablation site or bleeding, should be addressed promptly. Infection is often related to bile duct injury, making strict aseptic precautions during the procedure crucial. In some cases, antibiotics may be used preventatively.

CONCLUSION AND FUTURE PROSPECTS

In conclusion, the Chinese Expert Consensus on the Co-Ablation System for Primary Liver Cancer provides invaluable insights and recommendations for healthcare professionals deeply involved in the management of liver cancer. This consensus sets out to standardize and enhance the application of the Composite Ablation System, offering newfound hope to patients battling liver cancer by improving treatment outcomes.

The composite ablation system signifies a significant stride forward in liver cancer treatment, providing enhancements in pain management, real-time monitoring, and cost-effectiveness. Notably, under public medical insurance coverage in Shanghai, China, the price for the Composite Ablation System is 3,000 RMB (approximately 466 USD), whereas conventional ablative procedures cost 2,000 RMB (approximately 311 USD). This price comparison underscores the cost-effectiveness of the Composite Ablation System alongside its numerous advantages. As research continues to expand and diversify in this field, the composite ablation system is positioned to assume a more pivotal role in combating primary liver cancer. Nevertheless, detailed outcomes are not yet available due to the recent introduction of this product to the market. This expert consensus marks a significant stride towards ensuring its efficient and safe utilization within clinical practice.

Composite Ablation, which amalgamates the benefits of both thermal and cryo-ablation, ensures comprehensive tumour ablation while mitigating the risk of bleeding. Moreover, it results in more extensive tumour destruction, unveiling a greater number of antigens following tumour necrosis, thereby invigorating anti-tumoral immunity^[13,14]. Consequently, the prospect of combining Composite Ablation with immunotherapy is undeniably promising. The current consensus provides an in-depth exploration of the critical operational facets of combination ablation, making it an indispensable reference for those considering the adoption of this technique. We eagerly anticipate the forthcoming developments, continued research, clinical trials, and exchange of knowledge among experts in this field and their profoundly positive impact on patient outcomes.

DECLARATIONS

Authors' contributions

The author contributed solely to the article.

Availability of data and materials

Not applicable.

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Conflicts of interest

The author declared that there are no conflicts of interest.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

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