Therapy - Minimize harm to patients

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Haifu

Model JC200

Focused Ultrasound Tumor Therapeutic System

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Focused Ultrasound Tumor Therapeutic System

Product Structures

Treatment Table

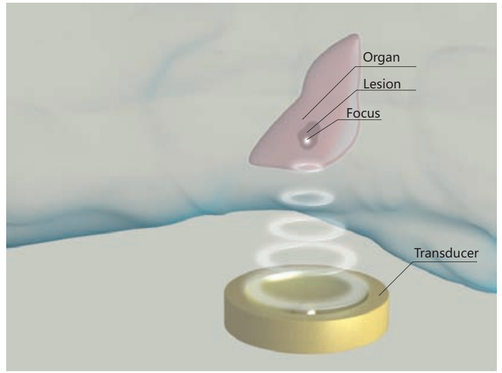
- High-Frequency Generator
- Integrated Transducer
- 6-Dimension Motion Devices

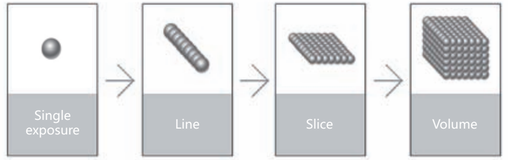
Central Console

- Ultrasound Monitoring Device
- Therapeutic Control Part

Auxiliary Systems

- Water Treatment System
- Safety Protecting Device





Technology

- An ultrasound beam can propagate through living tissue harmlessly and be focused at a tiny focal region. The energy in the focal region is high enough to induce an immediate thermal toxicity (temperature above 56 °C) which will cause irreversible coagulative necrosis (a "lesion").

3D Conformal Treatment

- From a point (single exposure) to a line, then a slice, then a volume that covers the entire tumor at any shape.
- Large-volume ablation in a single treatment
- Safe ablation of malignant tumors adjacent to major blood vessels

Powerful TPS Software

- 3D targeting module defines the boundary of tumor
- 3D planning module divides tumors into appropriate slices, records and analyzes coordinate information, forms a 3D therapeutic plan.
- Therapeutic module manages the treatment in conformity with treatment planning, monitors the tissue response and the safety of acoustic pathway, adjusts therapeutic parameters.

Precise Ablation Technology

Precise Boundary

- The treatment planning software enables conformal ablation of the whole tumor with no upper limit on the volume nor tumor shape
- The margin between treated and untreated tissue can be as narrow as 6 to 10 cells wide

Precise Dosage

- Real-time imaging allows visual feedback during treatment process
- Immediate image after each exposure can be compared with the previous
- An operator can adjust the dose anytime to suit the individual needs
- Integrated dose data will be recorded for future analysis and effect evaluation

Precise Control

- With ±1 mm accumulative error, the accurate movement of 6-dimensional motion system can ablate tumors adjacent to major vessels and nerves safely
- Color Doppler Ultrasound provides clear real-time monitoring during the whole treatment procedure

Indications

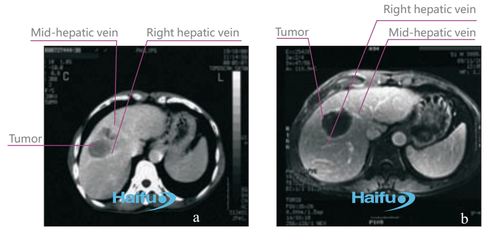
Solid tumors of soft tissues, such as liver tumor, uterine fibroids, Breast cancer, kidney tumor, pancreas tumor, bone tumor.

Contraindications

- Tumors in air-containing viscera, such as lung, stomach, and bowel
- Mediastinal tumors
- Spinal tumors

Clinical Advantages

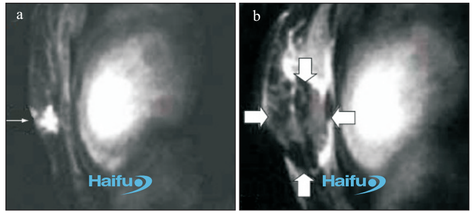
- Noninvasive treatment to preserve organs and structures, with no blood transfusion and no radiation
- Conformal and precise ablation
- One time treatment, no limitation by tumor size and shape
- Real-time ultrasound-guided therapy with digital quantitative analysis
- Activation of immune system



Lian Zhang, High-intensity focused ultrasound (HIFU):effective and safe therapy for hepatocellular carcinoma adjacent to major hepatic veins. Eur Radiol (2009) 19: 437–445

Liver cancer

A 51-year-old man with HCC. (a) Before HIFU. CT image shows a large tumor adjacent major hepatic veins (b) Enhanced MR images shows no enhancement in treated region and no damage to hepatic vein 2 weeks after HIFU treatment.



Feng Wu, High-intensity focused ultrasound ablation of breast cancer. Expert Rev. Anticancer Ther. 7(6), (2007). 823-831

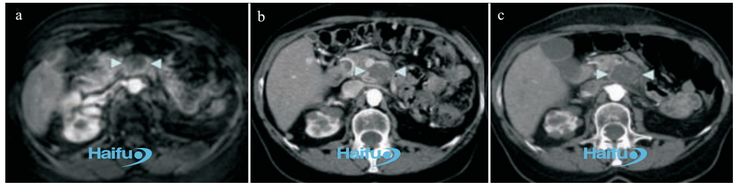
Breast cancer

Contrast-enhanced MRI shows complete necrosis of HIFU-treated breast cancer. (a) Before treatment, the breast lesion is circumscribed, and contrast uptake is detected in the tumor (arrow) and normal tissue surrounding the tumor; (b) 7 days after HIFU, an absence of contrast uptake in ablated volume (arrows), including tumor and a margin of treated normal breast tissue about 1.5–2.0 cm around the cancer.

Wenzhi Chen, Primary Bone Malignancy:Effective Treatment with High-Intensity Focused Ultrasound Ablation, Radiology: Volume 255: Number 3—June 2010

Bone tumour

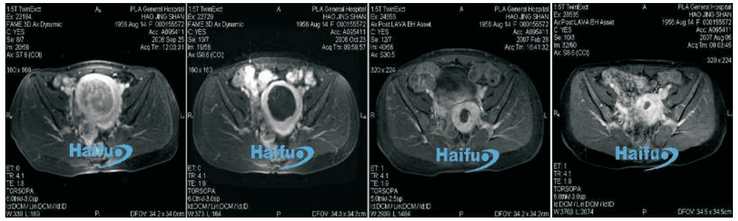
Enhanced MR images obtained in 18-year-old woman who underwent HIFU ablation for tibia osteosarcoma. (a) Image before HIFU shows single hypervascular lesion (arrow) in the left tibia. Images (b)2 weeks and (c)36 months after HIUF show no evidence of enhancement in treated region (arrow).



Gianluigi Orgera, High Intensity Focused Ultrasound Ablation of Pancreatic Neuroendocrine Tumours: Report of Two Cases. Cardiovasc Intervent Radiol .2011 Apr;34(2):419-423

Pancreatic cancer

A 43-year-old woman with pancreatic tumor. (a) MRI before HIFU shows a 2.4-cm lesion (arrowheads). (b) MDCT performed 24h after HIFU shows ablation of entire lesion (arrowheads). (c) MDCT scan 9 months after treatment shows the lesion appears slightly diminished in dimensions but widely hypodense and without residual enhancing region (arrowheads).



Uterine fibroids

Enhanced MRI images in a 37-year-old woman with uterine fibroids. Before treatment, the fibroid had abundant and active blood supply. Fourteen days after treatment, the fibroid showed obviously shrinkage and lost activity. MRI examination 4.5 months and 10 months after HIFU showed obvious shrinkage of treated fibroids.

End-users

Well-known hospitals in the world are using Haifu's system:

Over 100 centers and 50,000 cases worldwide (Feb, 2013)

The John Radcliffe Hospital, Oxford, UK

- European Institute of Oncology, Milan, Italy
- The John Radcliffe Hospital, Oxford, UK
- University Clinics of Bonn, Bonn, Germany
- Hospital Mutua de Terrassa, Barcelona, Spain
- Saint Marina Hospital, Pleven, Bulgaria
- Medical Center of Central Bank of Russian Federation, Moscow, Russia
- Queen Mary Hospital of the University of Hong Kong, China
- King Fahad Medical City, Riyadh, Saudi Arabia
- Incheon Christian Hospital, Incheon, Korea
- CIMEQ (Centro de Investigaciones Medico Quirurgicas), Havana, Cuba
- 301 PLA General Hospital, Beijing, China
- etc.

Total Solution

Professional Equipment

With complete intellectual rights and CE-mark, it is the world first equipment clinically applied in tumor treatment, a result of over 20 years experience and optimization.

Experienced Specialists

A team of experienced medical and engineering specialists will provide integrated training and service to enable the end-users independent operation of the equipment.

Customized Solution

Suitable clinical protocols, operation & management advices and research cooperation proposal will be tailored for each end-users.

Qualification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① Certification of CE
② Certification of ISO9001
③ Certification of ISO13485
④ Certification of National SFDA (China)
⑤ National Prize of Technological Invention (China)
⑥ Certification of KFDA (Korea)
⑦ National Prize of scientific and technological advance (China)
⑧ Market Licence of Russia
⑨ Patent (Singapore)
⑩ Patent (USA)
⑪ Patent (Japan)
⑫ Patent (Canada)
⑬ Patent (Russia)
⑭ Patent (Korea)
⑮ Patent (Australia)
⑯ etc.

Main Parameters	Acoustic focusing efficiency	28000
	Focal region	1.1mm×1.1mm×3.3mm
	Max acoustic intensity	25000W/cm^2
	Max output acoustic power	400W
	Side lobe	<-10dB
	Maximum range of transducer movement	X=120mm,Y=120mm,Z=180mm
	Movement control accuracy	±0.1mm
	Accumulated tolerance in linear movement	±1mm
	Therapeutic frequency	0.8-2.4MHz
	Probe vertical movement range	0-100mm
	Probe rotating angle range	±90°
	Dissolved oxygen	≤3ppm
	Electrical Power	8.5KVA
Installation Environment	Room requirement	Area：≥20m^2, Width：≥3.5m
	Power requirement	Three-phase five-wire power cable with ground wire which in conformity with local laws
	Water requirement	Flow: ≥1m^3/h, Pressure:0.1-0.5MPa