日本語要約

- 皮膚から突出する腫瘍は、RF加温により著しい腫瘍内温度の上昇が得られる
- 今回、甲状腺癌3例、乳癌2例において、通常では考えられない腫瘍縮小効果が得られたので報告した
- 皮膚から突出する腫瘍に対して、温熱療法がこのように著効することが、広く認知されることを期待する

Hyperthermia for protruded tumor from the skin

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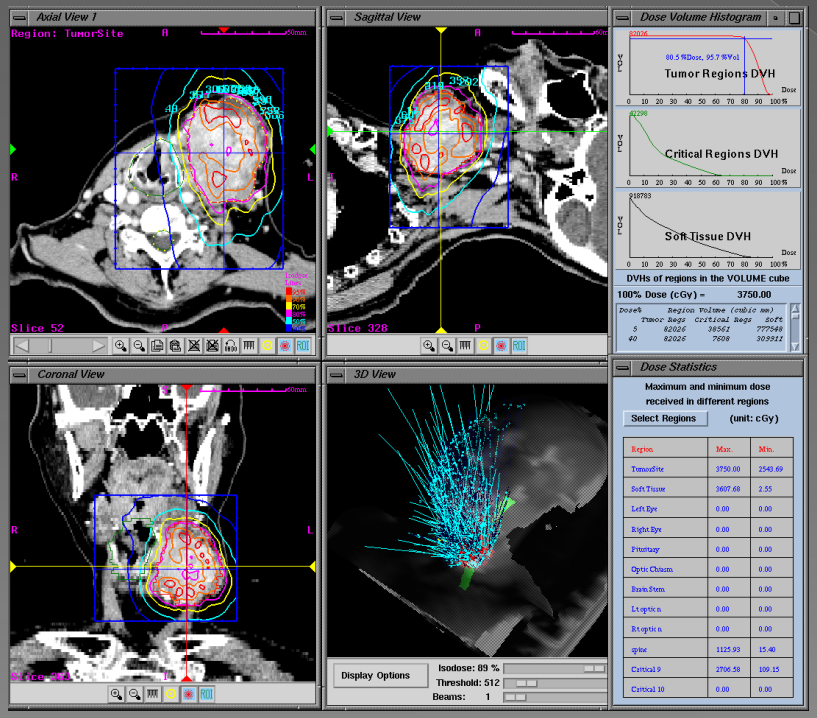
Backgrounds

- Hyperthermia (HT) for protruded tumors from the skin is not widely used in spite that high temperature can be easily obtained.
- We report the effectiveness of HT in five patients with tumors protruded from the skin.

Case 1: thyroid cancer 80's female

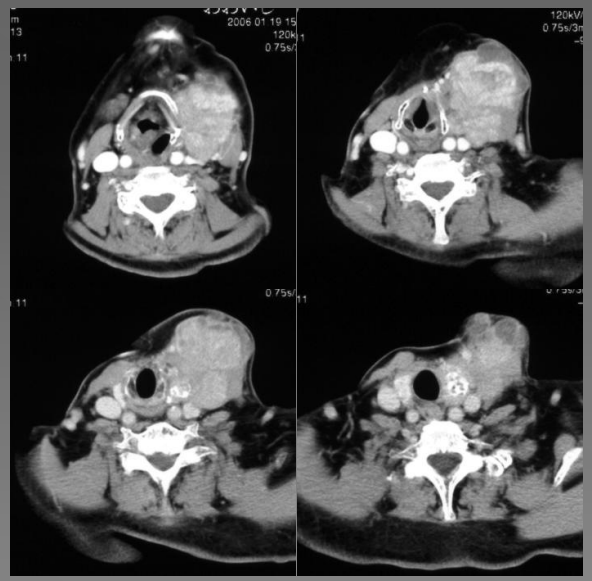
- 2003/4 Diagnosis of thyroid differentiated cancer
  No indication of surgery
- 2006/2 Start of treatment, because of dysphasia by the rapid growth of tumor

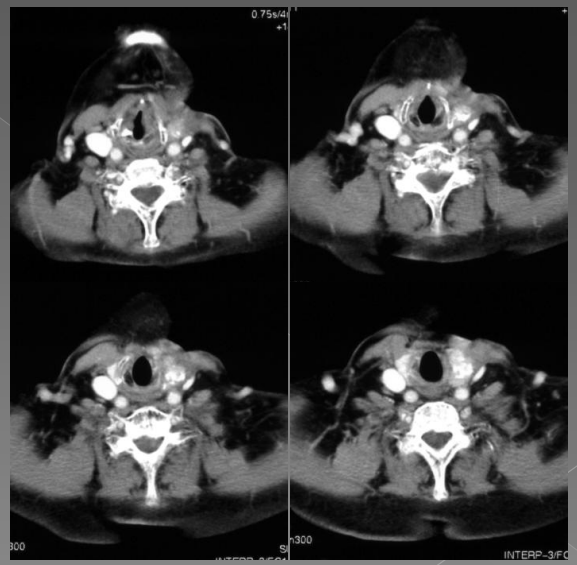


Cyber Knife: 30Gy/ 3 fractions

HT 2 sessions
Tmax: 43℃, 30min/ 47℃, 40min

Treatment results

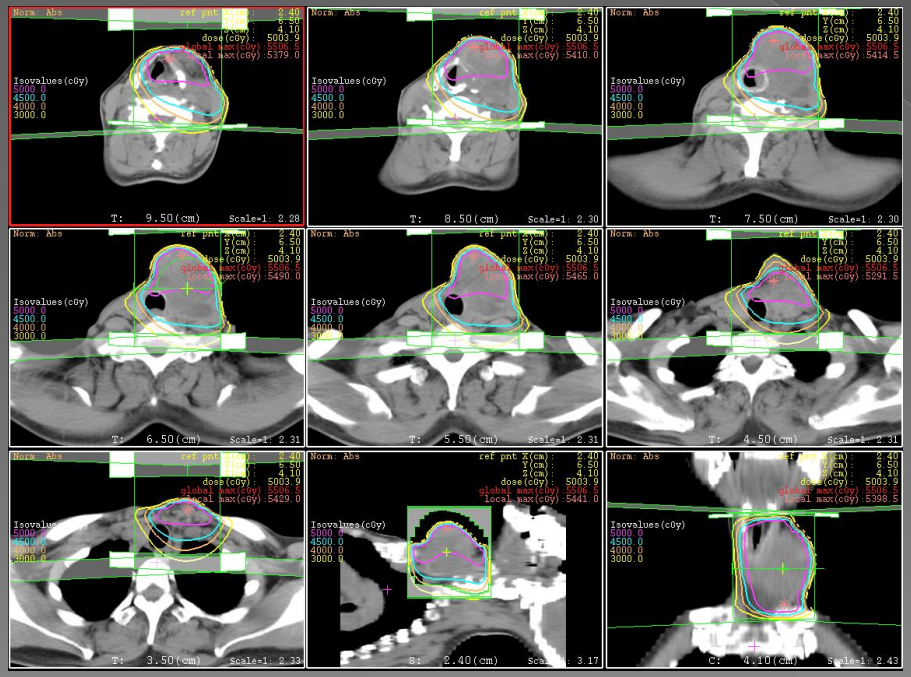




Clinical response: CR

Case 2: thyroid cancer 50's female

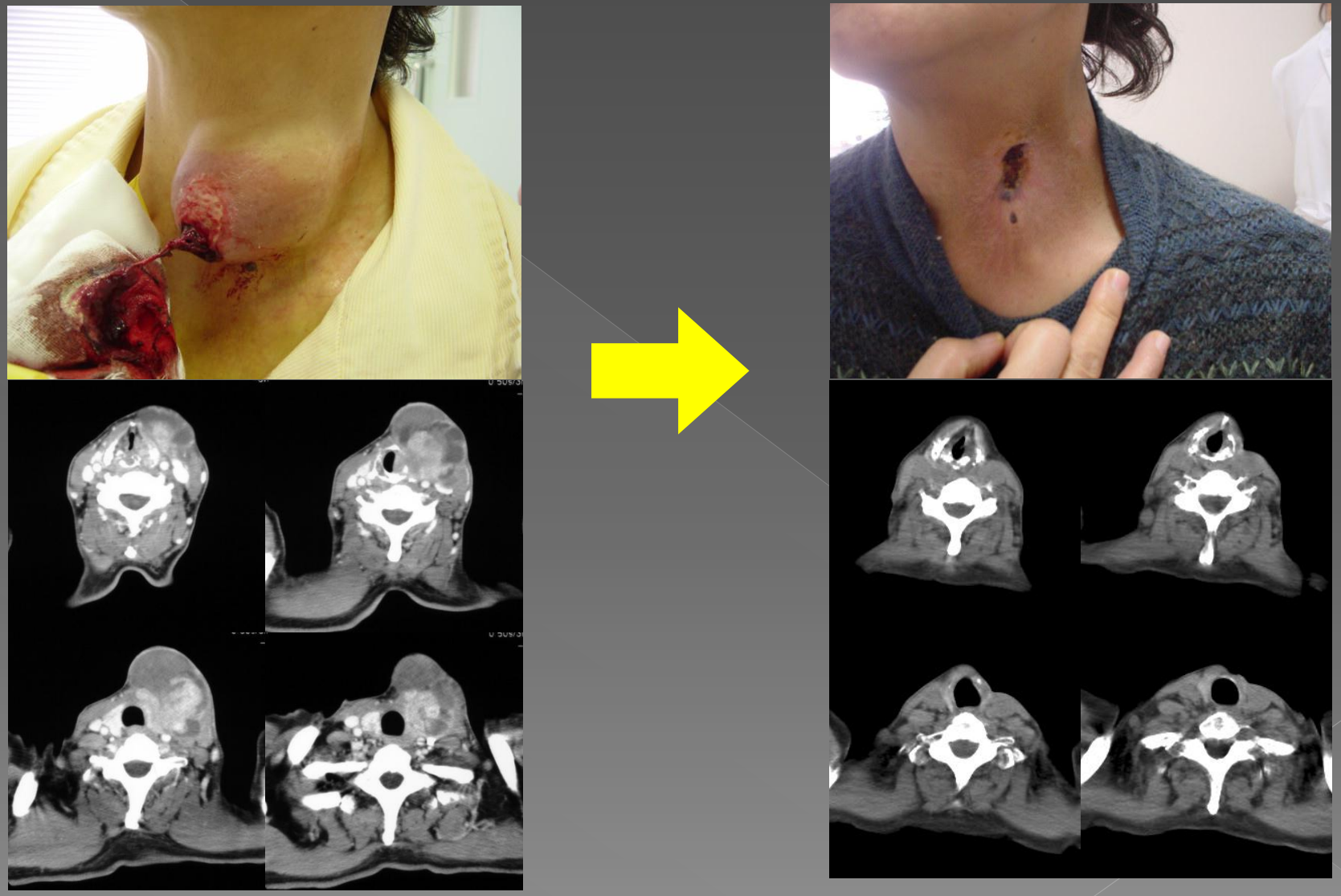
- 2002 Surgery of differentiated thyroid cancer
- 2004 Local recurrence
- 2006/6 Start of treatment because of tumor bleeding



external irradiation
4MV X-ray 50Gy/25 fractions

HT 1 session
Tmax: 45℃ 60min

Treatment results



Clinical response: CR

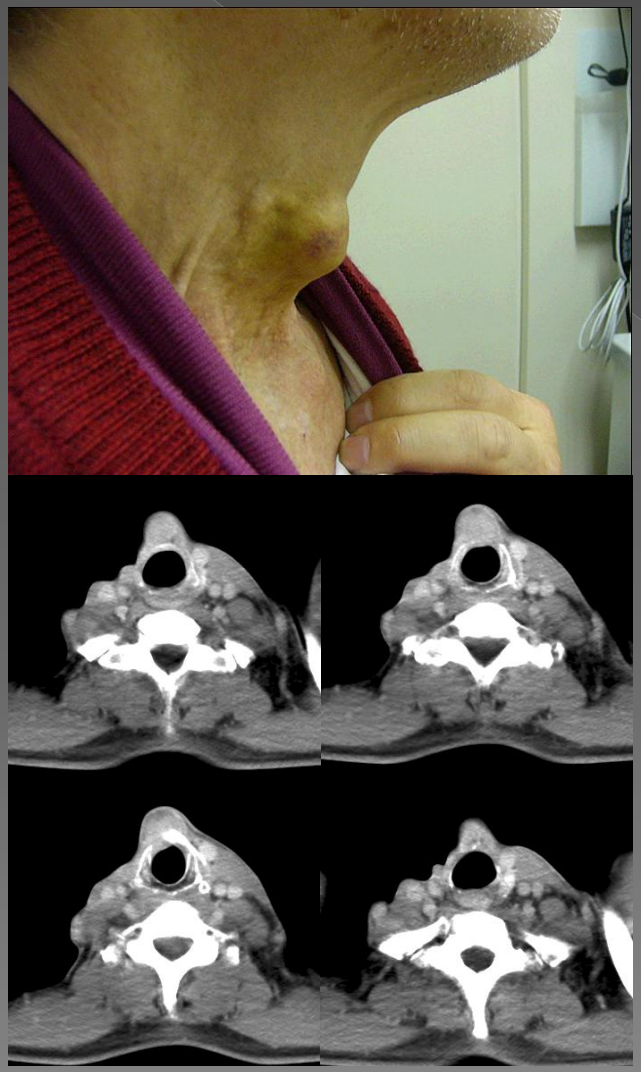
Case 3: thyroid cancer 60's male

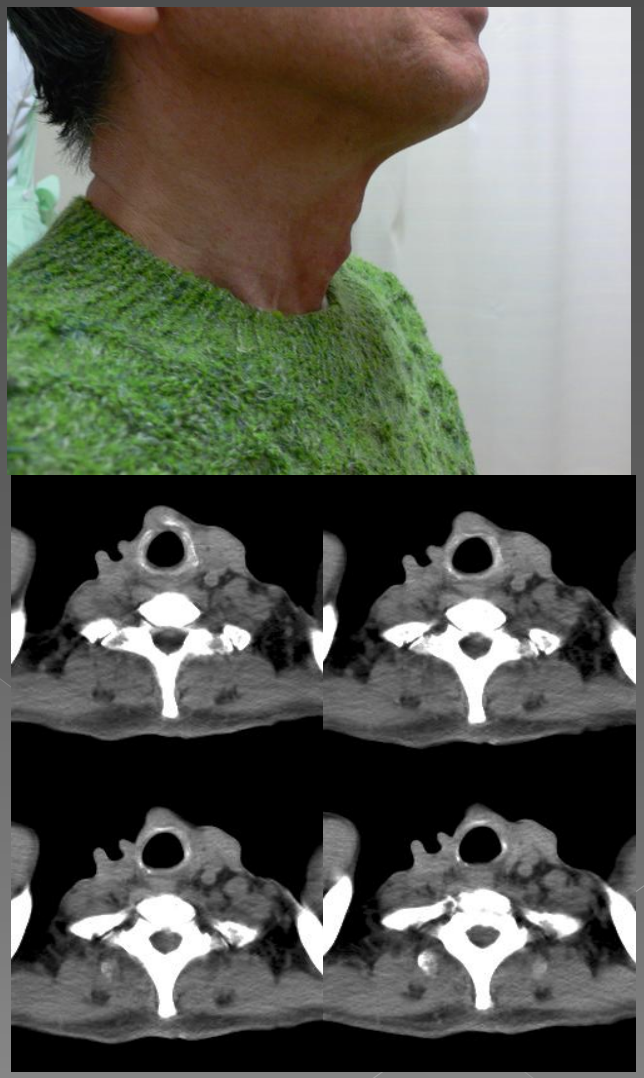
- 1998 Surgery of differentiated thyroid cancer and 40Gy of postoperative radiotherapy
- 2007/1 Diagnosis of differentiated thyroid cancer recurrence, Start of treatment

external irradiation
12MeV electron 50Gy/25 fractions

HT 2 sessions
Tmax: 45℃ 60min/44.5℃ 40min

Treatment results

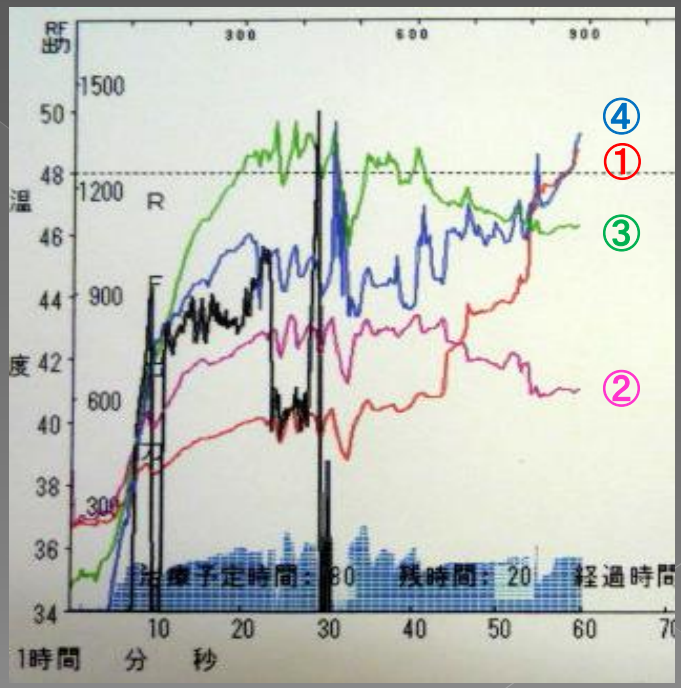




Clinical response: CR

Case 4: breast cancer 80's female

- 2009/1 Diagnosis of right breast cancer (T4N3M1)
  Start of treatment : systemic chemotherapy and local HT



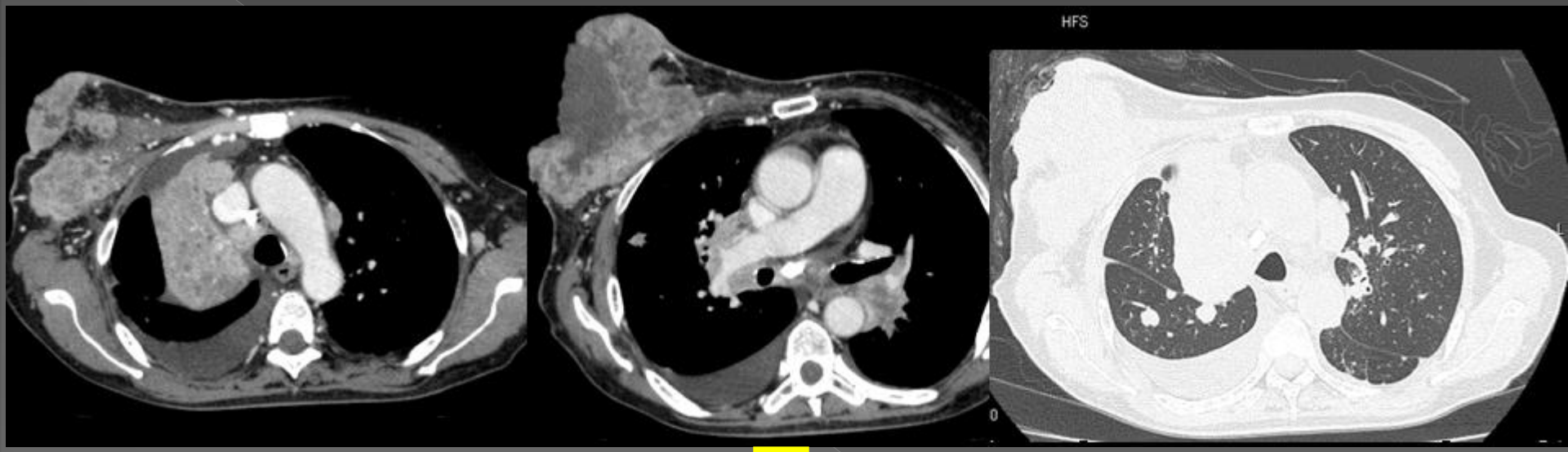
①48.5 ℃ ②43.3 ℃ ③48.9 ℃ ④48.8 ℃ ⑤45.2 ℃

Hyperthermia

- Period :2009/2-5, 30 sessions
- Treatment time :50min
- Average Power :142.6±36.7w
- Electrode size :A:10/ B:30cm
- Tmax :48.9℃

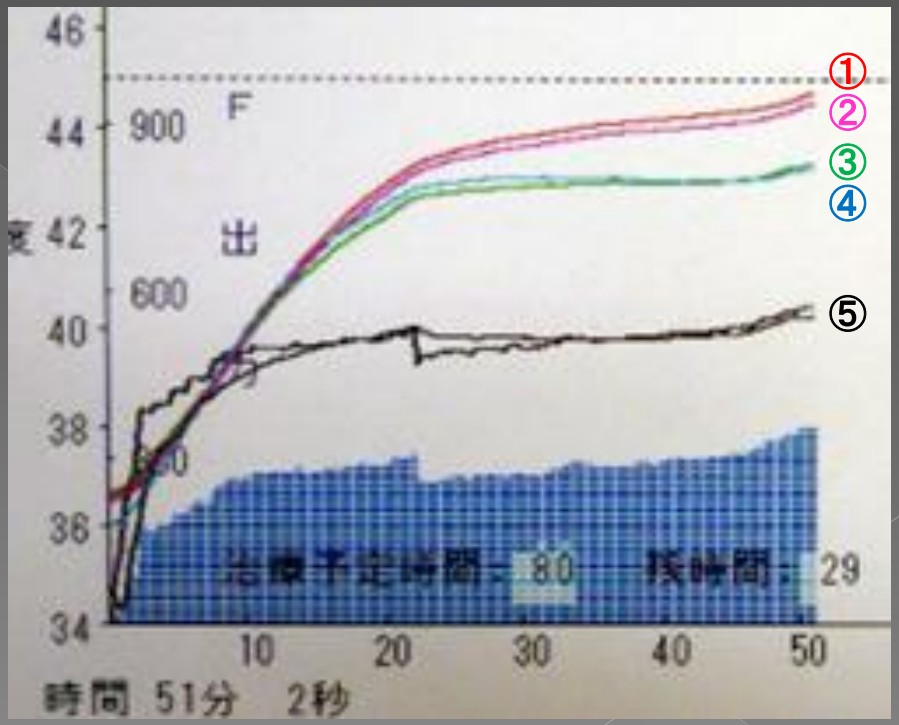
PAC 2 course/ FEC 6 course/DOC 3 course
Clinical local response: CR

CT



Case 5: breast cancer 40's female

- 2009/2 Diagnosis of right breast cancer (T4N3M1)
  Start of treatment : systemic chemotherapy and local HT



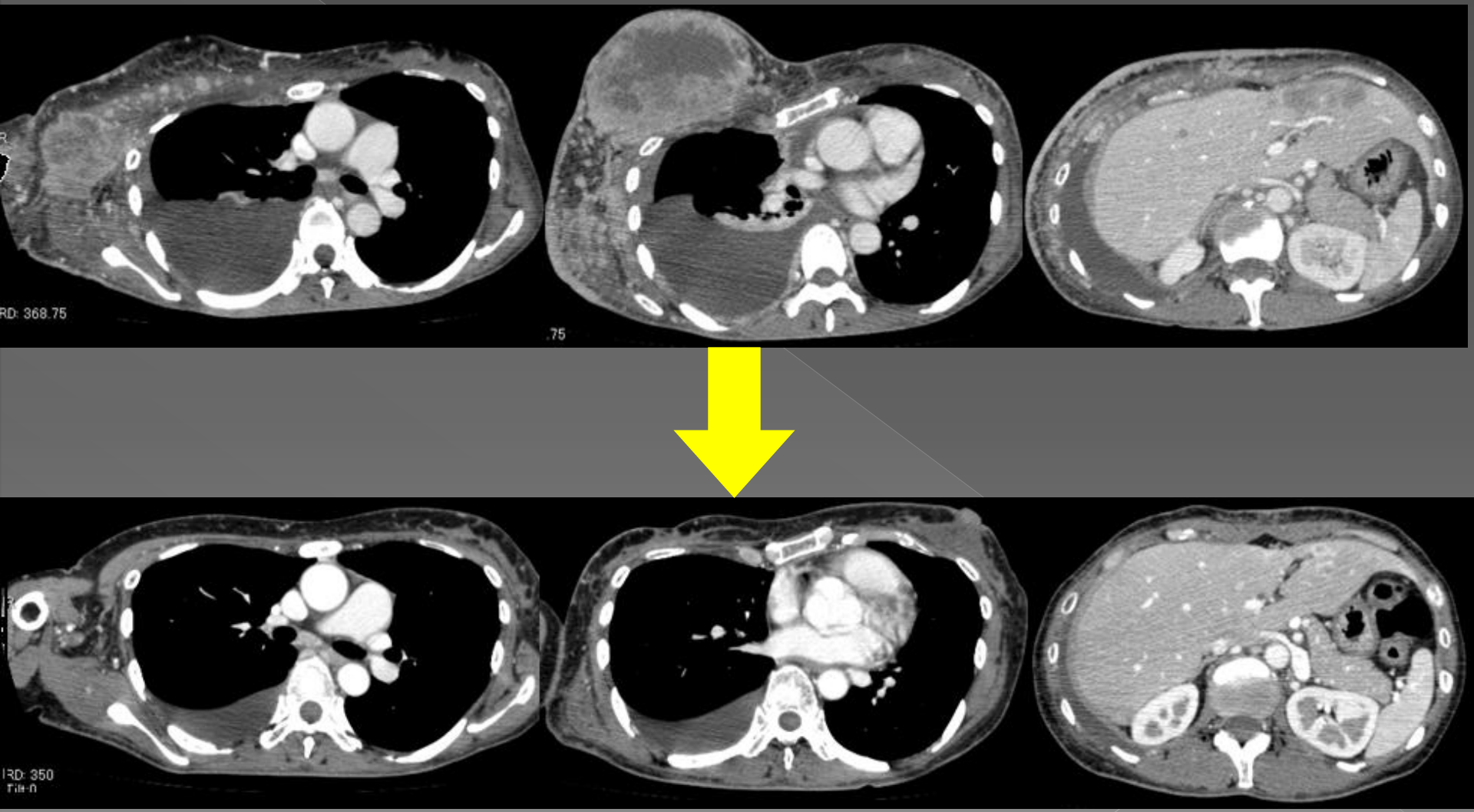
①44.7 ℃ ②44.5 ℃ ③43.3 ℃ ④43.2 ℃ ⑤40.2 ℃

Hyperthermia

- Period 2009/2-6, 35 sessions
- Treatment time 50min
- Average Power 275.7W±38.5
- Electrode size A: 10cm B: 30cm
- Tmax 44.7℃

PAC 3course/ FEC6course/ DOC1course
Clinical local response: CR

CT



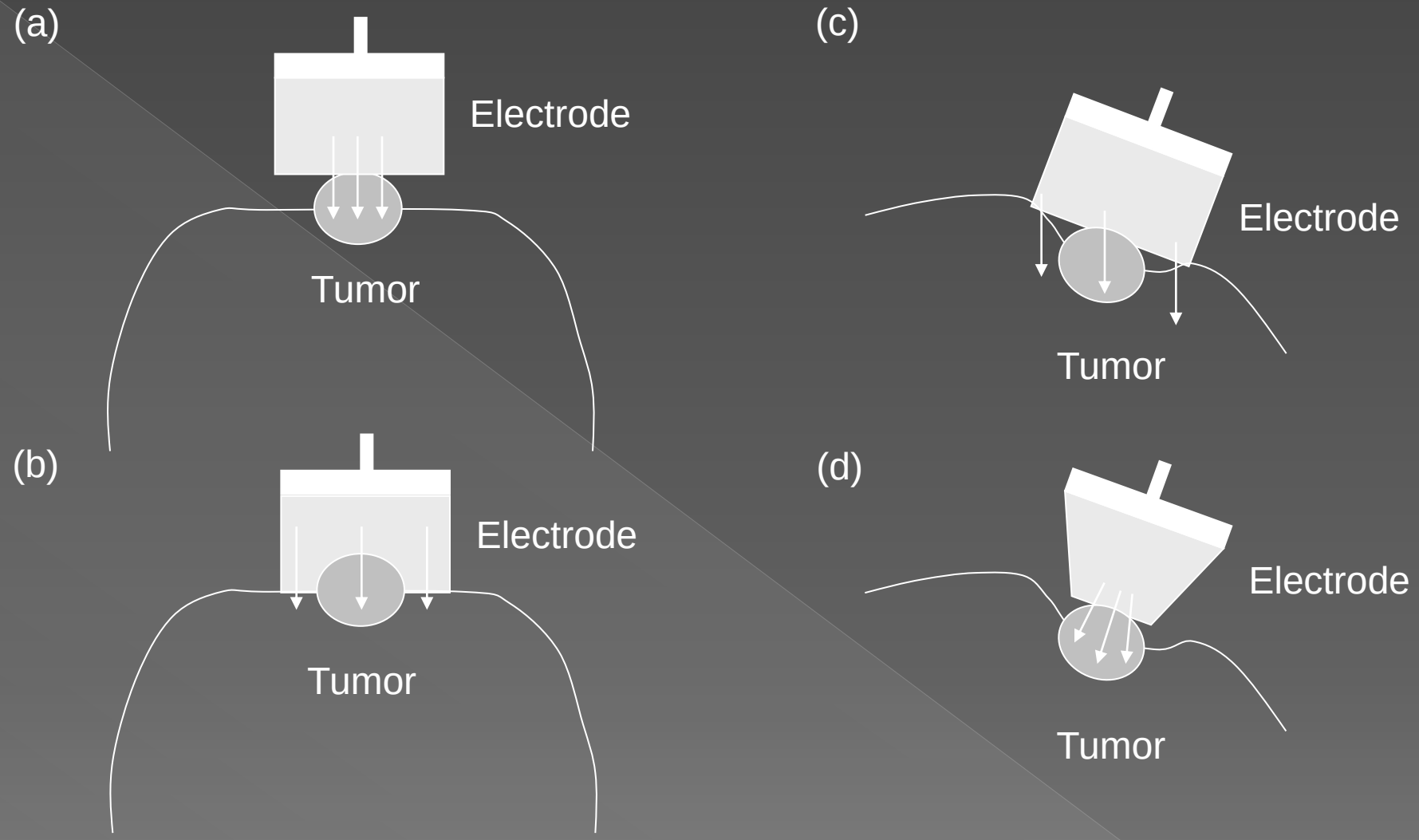


Figure 1: The setting of electrode for tumor protruded from skin. In a flat locus, it is easy to arrange the electrode on the projected tumor from the skin (a). In the lesion on a concave surface, it is very difficult to set the conventional electrode only on the top of the tumor as shown in (b). Therefore we have developed the cone type electrode pad (c).

Results

- Protruded tumors from the skin were remarkably diminished in three thermo-radiotherapy of differentiated thyroid cancer cases and two thermo-chemotherapy of huge breast cancer.
- The maximum intra-tumor temperature was high (44.7 - 48.8°C) in spite of low RF-outputs at 100-300W.
- Thermoesthesia and thermal burns with heating did not occur.

Discussion

- Good local effect of HT for superficial tumors has been reported by many authors.
- We reported that HT was useful for the treatment of the protruded tumor from the skin.
- In this study, we demonstrated that even the differentiated thyroid cancer and huge breast cancer were diminished by high temperature HT.
- Our results show that most RF waves can efficiently pass within the whole tumor when protruded from skin, which leads to excellent heating.

Conclusion

- HT was useful for the treatment of the protruded tumor from the skin.
- Effectiveness of HT on this type of tumor is necessary to be recognized.