Oncothermia Journal 18:139-150 (2016)

Hyperthermia combined with radiation in cervical cancer

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HYPERTHERMIA COMBINED WITH RADIATION IN CERVICAL CANCER

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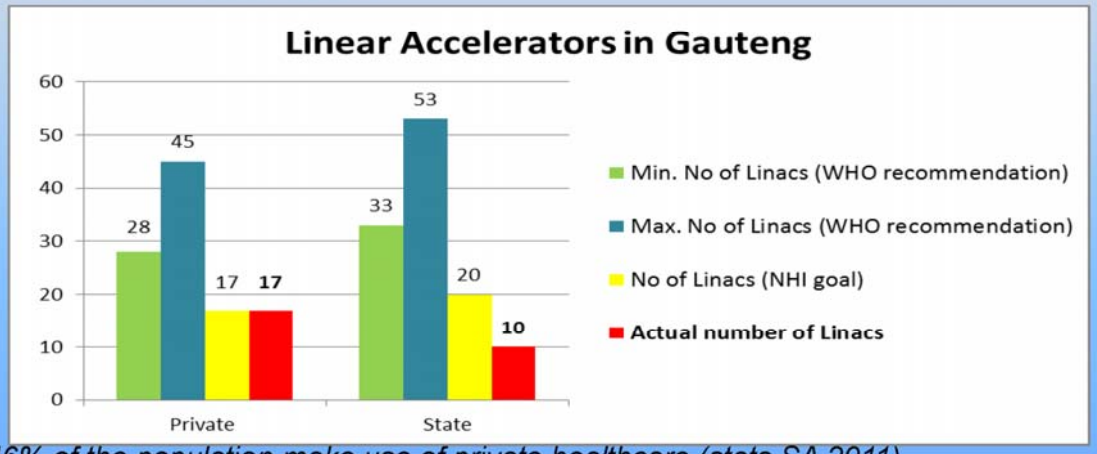
South Africa

South Africa

- Limited resources



46% of the population make use of private healthcare (stats SA 2011).

Gauteng is in urgent need of an additional linear accelerator that can serve both private and state patients.

South Africa

- Limited resources
  - Not enough Linacs
  - PET and CT machines were not working for 6 months
- Poverty
  - Transport problems
  - Missed appointments
  - Lost to follow ups
- Patients present at advanced stage of disease
- Immunocompromised
  - Can't use Cisplatin as a radiosensitiser

Can we help overcome the challenges of third world healthcare?

Aim

To determine the clinical effects of the addition of modulated electro-hyperthermia to the standard treatment protocols LACC patients.

OUTCOMES:

- **Local disease control at 6 months (PET scan)**
- **2 year Survival**
- **Toxicity: early and late**
- **Quality of Life**

Materials and Methods

Sample group

- N=236 (current n=174 enrolled)
- Public Healthcare patients
- **Ages** 18-70 years
- **FIGO staging:** IIB– IIIB squamous cell
- **Comorbidities:** Diabetes and hypertension
- **Excluded:** Contraindications to treatment
  Immunocompromised patients
  Renal dysfunction

Materials and Methods

Treatment protocol

- **External Beam Radiotherapy (EBRT):** 50 Gy over 25 fractions
- **Brachytherapy:** High Dose Rate (Ir^{192}) 3 x 8 Gy doses
- **Cisplatin:** 1- 2 doses 80mg/m2

EHT Protocol: 2 x 55 min Rx/week

Materials and Methods

Adverse Events

- **Common Terminology Criteria for Adverse Events (CTCAE) version 4.0**

  43 symptoms were graded and grouped into: *Haematological Ototoxicity Neurotoxicity, Immunological, Rectal, Digestive, Dermatological, Urinary, Renal, Gynaecological*

- **Time Points:**
  - Acute Toxicity: Weekly during treatment
    6 weeks post treatment
    3 months post treatment
  - Late Toxicity: Every 6 months post treatment

Materials and Methods

Quality of Life

- EORTC (CX 30) and cervix specific (CX24)
- EuroQoL (EQ-5D-5L)

- **Time points:**
  - Pre treatment
  - 6 weeks post treatment
  - 3, 6, 12, 18, 24, months post treatment

Results

First 100 patients:

Screening failure: 27%

Death
Development of contraindications or co-morbidities before or during treatment
Moved to palliative care after PET scan
Decided against treatment

HIV + : 52% HIV - : 48%

Results

FIGO STAGE distribution

Excluding Screening failures

FIGO STAGE	HT						no HT					
	HIV+	12	HIV-	14	Total	26	HIV+	26	HIV-	21	Total	47
	n	%	n	%	n	%	n	%	n	%	n	%
Stage IIB	4	33%	4	29%	8	31%	9	35%	3	14%	12	26%
Stage IIIA	0	0%	0	29%	0	0%	0	0%	1	5%	1	2%
Stage IIIB	8	67%	10	29%	18	69%	17	65%	17	81%	34	72%

Results

AGE distribution

Excluding Screening failures

AGE	HT						no HT					
	HIV+	12	HIV-	14	Total	26	HIV+	26	HIV-	21	Total	47
	n	%	n	%	n	%	n	%	n	%	n	%
<30	0	0%	0	0%	0	0%	2	8%	0	0%	2	4%
30-50	7	58%	5	36%	12	46%	16	62%	4	19%	20	43%
>50	5	42%	9	64%	14	54%	8	31%	17	81%	25	53%

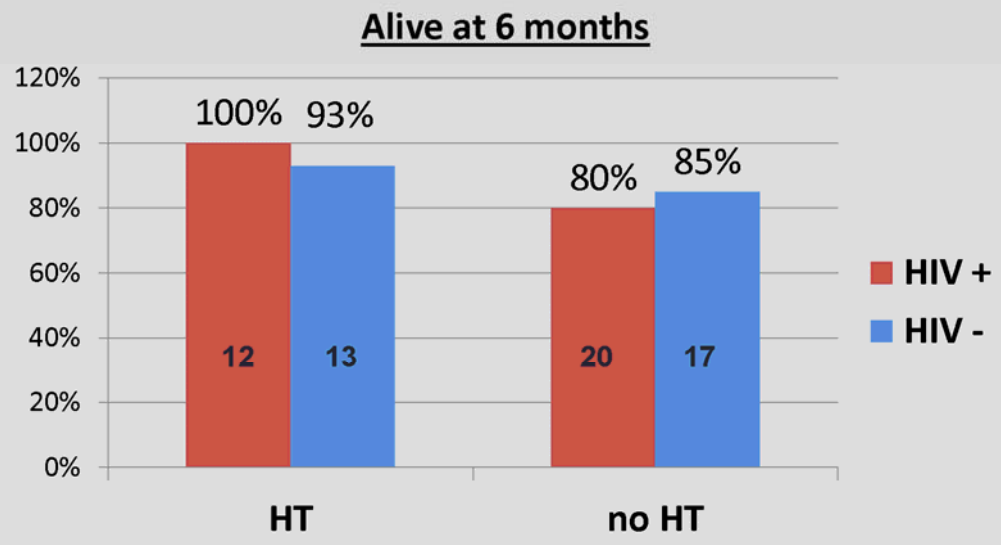
Results

6 month survival

Excluding non disease related deaths, n=71

6 months	HT						no HT					
	HIV+	12	HIV-	14	Total	26	HIV+	25	HIV-	20	Total	45
	n	%	n	%	n	%	n	%	n	%	n	%
Alive	12	100%	13	93%	25	96%	20	80%	17	85%	37	82%
Deceased	0	0%	1	7%	1	4%	5	20%	3	15%	8	18%

Results: 6 month survival



Results

6 month Local Disease Control

70 patients completed 6 month PET scan
1 patient was unable to lie still due to bone pain

	Total n	26 %	Total n	44 %
1. Complete response	13	50%	17	39%
2. Partial response	10	38%	10	23%
3. No change	2	8%	2	5%
4. Local progression	0	0%	7	16%
5. Death d/t disease	1	4%	8	18%

Frequency table, expected frequency, chi2 contribution
Fisher's exact = 0.058

Results: Quality of Life

Analysis of change from baseline score
(more than 30 points < or >)
And score at specific time points

AT INITIATION:

Worse in EHT group: Sexual worry, nausea,
Better in EHT group: role functioning

Results: Quality of Life

At 6 Weeks
Nausea and vomiting ↑ HT group (p=0.0109)

At 3 Months
Pain ↑ in HT group (p=0.007)
Appetite ↑ in HT group (p=0.0221

At 6 Months
Sexual worry↑ in HT group (p=0.0197)
Emotional functioning ↑ in HT group (p=0.0307)

Factors which may affect toxicity:

- **HIV status:** *No significant effect*

- **Hyperthermia (HT):** *Significant effect in:*

On treatment and 6 weeks post treatment

Diarrhoea:	↑ Frequency of **Grade I in HT**
Urinary pain:	↑ Frequency of **Grade II** in **non HT**
Cystitis:	↑ Frequency of **Grade II** in **HT** at 3 months only

Discussion

- Positive trend in the six month survival
- Positive trend in local disease control
- Difference in Quality of Life and Acute toxicity is not significant
- Late side effects will be assessed with continued follow up.
- Overall survival will be followed up

Conclusion

- Initial results are promising with therapeutic benefit.
- Continued follow up and increased patient numbers needed to strengthen the results.


THANK YOU
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Ans Baeyens
Jeffrey Kotzen
NRF
National Research Foundation
iThemba LABS
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