CURRENT STANDARD OF CARE IN NASOPHARYNGEAL CANCER

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DISCLOSURE SLIDE

Advisory role: MSD (uncompensated), Innate, Debio, Astra-Zeneca, Nanobiotix

Research grants: Novartis, Janssen.
Nasopharyngeal carcinoma

- Nasopharyngeal cancer linked to EBV
- Propensity to give distant metastases (Bone, lung, and liver)
- Radiosensitive and chemosensitive tumor
• ASR (cases/100,000/year) is <1 among Caucasians compared to >20 among Southern Chinese males
• Chinese immigrant populations to western countries have progressively lower NPC risk, but their incidence remains higher than the ‘native’ populations
• NPC incidence rate in Chinese born in the Orient 20.5, compared with 1.3 for Chinese born in Canada, and 0.2 for white people born in Canada
• First-degree relatives of NPC patients have 4–10 fold excess risk
<table>
<thead>
<tr>
<th>WHO</th>
<th>I Keratinizing squamous cell ca</th>
<th>II Non-keratinizing carcinoma</th>
<th>III Undifferentiated carcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>25%</td>
<td>12%</td>
<td>63%</td>
</tr>
<tr>
<td>Southern China</td>
<td>2%</td>
<td>3%</td>
<td>95%</td>
</tr>
</tbody>
</table>
TNM 8th Edition

**T categories**

T1  nasopharynx, oropharynx, nasal cavity

T2  Tumour with extension to parapharyngeal space and/or infiltration of the medial pterygoid, lateral pterygoid, and/or prevertebral muscles

T3  Tumour invades bony structures of skull base cervical vertebra, pterygoid structures, and/or paranasal sinuses

T4  Tumour with intracranial extension and/or involvement of cranial nerves, hypopharynx, orbit, parotid gland and/or infiltration beyond the lateral surface of the lateral pterygoid muscle

**N Categories**

N1  Unilateral metastasis, in cervical lymph node(s), and/or unilateral or bilateral metastasis in retropharyngeal lymph nodes, 6 cm or less, above the caudal border of cricoid cartilage

N2  Bilateral metastasis in cervical lymph node(s), 6 cm or less above the caudal border of cricoid cartilage

N3  Metastasis in cervical lymph node(s) greater than 6 cm in dimension and/or extension below the caudal border of cricoid cartilage
## TNM 8th Edition

### Stage Groups

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage II</td>
<td>T1</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N0, N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>T1, T2</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>N0, N1, N2</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IVA</td>
<td>T4</td>
<td>N0, N1, N2</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>Any T</td>
<td>N3</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IVB</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

Stage IV compressed previous stage IVB now IVA
Prognosis according to stage

Leung et al JCO 2006
Pattern of relapse

• T1-2 N0-1: good outcome
• T3-4 N0-1: local failure dominant
• T1-2 N2-3: distant failure dominant
• T3-4 N2-3: both
The cornerstone treatment is Radiation therapy (IMRT)
International guideline for the delineation of the clinical target volumes (CTV) for nasopharyngeal carcinoma.

Lee AW¹, Ng WT², Pan J³, Poh SS⁴, Ahn YC⁵, AlHussain H⁶, Corry J⁷, Grau C⁸, Grégoire V⁹, Harrington KJ¹⁰, Hu CS¹¹, Kwong DL¹², Langendijk JA¹³, Le QT¹⁴, Lee NY¹⁵, Lin JC¹⁶, Lu TX¹⁷, Mendenhall WM¹⁸, O’Sullivan B¹⁹, Ozyar E²⁰, Peters Lu²¹, Rosenthal DI²², Soong YL²³, Tao Y²⁴, Yom SS²⁴, Wee JT²⁵.
Distribution of lymph nodes in NPC (clinical examination)

Ipsilateral nodes

Contralateral nodes

Courtesy of V. Gregoire, Brussels
## Elective node selection

<table>
<thead>
<tr>
<th>Stage</th>
<th>Ipsilateral &amp; controlateral neck</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0</td>
<td>II-III-IV-V + RP</td>
</tr>
<tr>
<td>N1</td>
<td>II-III-IV-V + RP ± IVb₁ ± Vc₁</td>
</tr>
<tr>
<td>N2</td>
<td>Ib-II-III-IV-V + RP ± IVb₁ ± Vc₁</td>
</tr>
<tr>
<td>N3</td>
<td>Ib-II-III-IV-V + RP ± IVb₁ ± Vc₁ ± adjacent structures according to extra-nodal infiltration</td>
</tr>
</tbody>
</table>

¹ when involvement of level IVa and/or Vb

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*Courtesy of V. Gregoire, Brussels*

V. Gregoire et al. Radiother Oncol, 2000
Concomitant chemoradiation vs radiation
Phase III randomized trials of CRT vs RT

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Stage</th>
<th>N</th>
<th>Regimen</th>
<th>5-year PFS (%)</th>
<th>5-year OS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lin et al</td>
<td>2003</td>
<td>III-IV (AJCC 4th edition)</td>
<td>284</td>
<td>RT alone</td>
<td>53</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RT + Cisplatin/5-FU</td>
<td>72 (p=0.001)</td>
<td>72 (p=0.002)</td>
</tr>
<tr>
<td>Chan et al</td>
<td>2002, 2005</td>
<td>Ho’s N2/N3 or node≥ 4cm (NI)</td>
<td>350</td>
<td>RT alone</td>
<td>52</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RT + Cisplatin weekly (40 mg/m²)</td>
<td>62 (p=0.076)</td>
<td>72 (p=0.048)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RT + Oxaliplatin</td>
<td>74 (p=0.02) (DMFS)</td>
<td>73 (p=0.03)</td>
</tr>
</tbody>
</table>
Concomitant chemoradiation of **locally advanced** NPC

RT vs CRT with weekly cisplatin 40 mg/m²

*Chan et al JNCI 2005*
Three weekly concomitant CRT versus weekly cisplatin

Stage III-IVB
Stratification:
- Stage
- Centers

N = 520
Randomisation 1:1

Concomitant chemoRT 100 mg/m2 every 3 weeks (2 cycles)

Primary endpoint: Failure-free survival

Concomitant chemoRT 40 mg/m2 weekly (6 cycles)

Liang et al ASCO 2017
Three weekly concomitant CRT versus weekly cisplatin

Liang et al ASCO 2017
Concomitant chemoradiation + adjuvant chemotherapy versus radiotherapy

20% of patients will fail with distant metastases
# Phase III randomized trials of CRT plus adjuvant CT vs RT

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Stage</th>
<th>N</th>
<th>Regimen</th>
<th>5-year PFS (%)</th>
<th>5-year OS (%)</th>
</tr>
</thead>
</table>
RT + Cisplatin (3-week) → Cisplatin + 5FU | 29  
58 p=0.001 | 37  
67 p=0.001 |
| Wee et al   | 2005   | III-IV AJCC 5th Edition | 221 | RT alone  
RT + Cisplatin (3-week) → Cisplatin + 5FU | 53  
72 p=0.009 (3-year) | 65  
80 p=0.061 (3-year) |
| Chen et al  | 2013   | III-IVb AJCC 5th Edition | 316 | RT alone  
RT + Cisplatin (weekly) → Cisplatin + 5FU | 57  
68 p=0.015 | 62  
72 p=0.043 |
| Lee et al   | 2010   | III-IVb AJCC 5th Edition | 348 | RT alone  
RT + Cisplatin (3-week) → Cisplatin + 5FU | 53  
62 p=0.035 | 64  
68 p=0.22 |
Concomitant chemoradiation of *locally advanced* NPC

RT vs CRT with high-dose cisplatin (X3) followed by 3 cycles of PF

Al-Sarraf et al JCO 1998
CRT +/- adjuvant or neoadjuvant chemotherapy
Phase III randomized trial of CRT +/- adjuvant CT

Chen et al Eur J Cancer 2017
MAC-NPC meta-analysis: 4806 individual patient data from 19 phase-III trials (1988-2010)

Blanchard et al Lancet Oncology 2015
MAC-NPC meta-analysis: 4806 individual patient data from 19 phase-III trials (1988-2010)
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MAC-NPC meta-analysis: 4806 individual patient data from 19 phase-III trials (1988-2010)
Radiotherapy vs Chemotherapy + radiotherapy: meta-analysis

<table>
<thead>
<tr>
<th></th>
<th>Overall survival</th>
<th>Progression-free survival</th>
<th>Locoregional control</th>
<th>Distant control</th>
<th>Cancer death*</th>
<th>Non-cancer death*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Induction</td>
<td>0.96 (0.80–1.16)</td>
<td>0.81 (0.69–0.95)</td>
<td>0.84 (0.66–1.07)</td>
<td>0.62 (0.48–0.79)</td>
<td>0.89 (0.73–1.09)</td>
<td>1.85† (1.05–3.29)</td>
</tr>
<tr>
<td>Adjuvant</td>
<td>0.87 (0.68–1.12)</td>
<td>0.80 (0.64–1.00)</td>
<td>0.61 (0.41–0.92)</td>
<td>0.80 (0.59–1.09)</td>
<td>0.84 (0.64–1.10)</td>
<td>1.08 (0.59–1.95)</td>
</tr>
<tr>
<td><strong>Concomitant</strong></td>
<td><strong>0.80 (0.70–0.93)</strong></td>
<td><strong>0.81 (0.71–0.92)</strong></td>
<td><strong>0.82 (0.67–1.01)</strong></td>
<td><strong>0.74 (0.61–0.90)</strong></td>
<td><strong>0.74 (0.62–0.89)</strong></td>
<td><strong>1.20 (0.77–1.87)</strong></td>
</tr>
<tr>
<td>Concomitant plus adjuvant</td>
<td><strong>0.65 (0.56–0.76)</strong></td>
<td><strong>0.62 (0.53–0.72)</strong></td>
<td><strong>0.54 (0.41–0.71)</strong></td>
<td><strong>0.56 (0.45–0.70)</strong></td>
<td><strong>0.63 (0.52–0.77)</strong></td>
<td><strong>1.19 (0.77–1.85)</strong></td>
</tr>
<tr>
<td>Overall</td>
<td>0.79 (0.73–0.86)</td>
<td>0.75 (0.69–0.81)</td>
<td>0.73 (0.64–0.83)</td>
<td>0.67 (0.59–0.75)</td>
<td>0.76 (0.69–0.84)</td>
<td>1.27 (0.99–1.64)</td>
</tr>
</tbody>
</table>

Overall test  p<0.0001    p<0.0001    p<0.0001    p<0.0001    p<0.0001    p=0.056
Interaction test (timing × treatment effect) p=0.012    p=0.041    p=0.054    p=0.18    p=0.084    p=0.55
Residual heterogeneity test p=0.36    p=0.62    p=0.78    p=0.031    p=0.54    p=0.25

Data are HR (95% CI) or p value. *Analyses based on 20 comparisons (4312 patients) because the cause of death was missing for three trials. †No difference (HR 0.91, 95% CI 0.39–2.15) was seen in a sensitivity analysis, excluding one trial (339 patients) that was a clear outlier.

Blanchard et al Lancet Oncology 2015
Do we need adjuvant and neoadjuvant chemotherapy?

- Individual patient data network meta-analysis

- 20 trials and 5144 patients (including 19 trials in the Blanchard meta-analysis)

- The 3 treatments that had the higher impact on survival were:

  - Concomitant CRT, Concomitant CRT → adjuvant CT, and Neoadjuvant CT → Concomitant CRT

Ribassin-Majed et al JCO 2017
Do we need adjuvant and neoadjuvant chemotherapy?

When focusing on schedules containing concomitant CRT:

- Adjuvant chemotherapy + CRT > concomitant CRT alone (significant for PFS and LCR control)
- Induction chemotherapy + CRT > CRT for PFS, locoregional control, and distant control.
Phase III of CRT +/- induction PF

**Induction** = 2 cycles  
Cisplatin : 80 mg/m²  
5-FU: 800 mg/m²  

**CRT** = Cisplatin 80 mg/m²

Cao et al Eur J Cancer 2017
Phase III of CRT +/- induction TPF

**Induction** = 3 cycles
Cisplatin: 60 mg/m2
5-FU: 600 mg/m2
Docetaxel: 60 mg/m2

**CRT** = Cisplatin 100 mg/m2

Sun et al Lancet 2016
Stage II disease
Stage 2 disease?

Stage II disease (T1-2N1M0 or T2N0M0 with parapharyngeal space involvement)

Weekly cisplatin 30 mg/m2

No adjuvant CT
Radiotherapy vs Chemotherapy + radiotherapy: meta-analysis

<table>
<thead>
<tr>
<th></th>
<th>Availability</th>
<th>Incidence of toxicity</th>
<th>OR (95% CI)</th>
<th>Efficacy p value</th>
<th>Heterogeneity p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute toxicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaemia</td>
<td>15 (19)</td>
<td>4059</td>
<td>4.3%</td>
<td>1.5%</td>
<td>2.95 (2.11-4.12)</td>
</tr>
<tr>
<td>Neutropenia</td>
<td>15 (19)</td>
<td>4028</td>
<td>25.2%</td>
<td>4.9%</td>
<td>6.21 (1.53-2.814)</td>
</tr>
<tr>
<td><strong>Mucositis</strong></td>
<td>14 (18)</td>
<td>3870</td>
<td>40.6%</td>
<td>31.2%</td>
<td>1.51 (1.31-1.73)</td>
</tr>
<tr>
<td>Cytopenia</td>
<td>13 (17)</td>
<td>3828</td>
<td>32.3%</td>
<td>11.0%</td>
<td>3.38 (0.97-1.44)</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>13 (17)</td>
<td>3585</td>
<td>12.2%</td>
<td>5.3%</td>
<td>2.49 (1.97-3.13)</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>14 (18)</td>
<td>3737</td>
<td>3.0%</td>
<td>1.5%</td>
<td>2.66 (1.39-3.65)</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>12 (16)</td>
<td>3542</td>
<td>0.2%</td>
<td>0.1%</td>
<td>1.94 (0.91-4.14)</td>
</tr>
<tr>
<td>Neurotoxicity</td>
<td>11 (14)</td>
<td>2998</td>
<td>0.2%</td>
<td>0.1%</td>
<td>1.65 (0.73-3.75)</td>
</tr>
<tr>
<td>Hyperglycemia</td>
<td>11 (14)</td>
<td>2957</td>
<td>3.2%</td>
<td>1.2%</td>
<td>2.28 (1.46-3.27)</td>
</tr>
<tr>
<td><strong>Weight loss</strong></td>
<td>9 (12)</td>
<td>2350</td>
<td>14.4%</td>
<td>8.2%</td>
<td>1.88 (1.46-2.45)</td>
</tr>
<tr>
<td>Febrile neutropenia</td>
<td>8 (11)</td>
<td>1995</td>
<td>3.0%</td>
<td>2.3%</td>
<td>1.30 (0.79-2.16)</td>
</tr>
<tr>
<td><strong>Late toxicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone necrosis</td>
<td>10 (14)</td>
<td>2404$</td>
<td>0.5%</td>
<td>0.4%</td>
<td>1.17 (0.51-2.66)</td>
</tr>
<tr>
<td>Visual deficit</td>
<td>9 (13)</td>
<td>2345$</td>
<td>1.7%</td>
<td>1.3%</td>
<td>1.28 (0.69-2.38)</td>
</tr>
<tr>
<td>Brainstem or spinal cord damage</td>
<td>9 (13)</td>
<td>2285$</td>
<td>0.7%</td>
<td>0.5%</td>
<td>1.25 (0.57-2.74)</td>
</tr>
<tr>
<td>Symptomatic temporal lobe necrosis (yes or no)</td>
<td>9 (13)</td>
<td>2266$</td>
<td>1.9%</td>
<td>2.3%</td>
<td>0.51 (0.52-1.60)</td>
</tr>
<tr>
<td>Xerostomia</td>
<td>9 (12)</td>
<td>2093$</td>
<td>5.1%</td>
<td>3.6%</td>
<td>1.45 (0.45-4.21)</td>
</tr>
<tr>
<td><strong>Cranial nerve palsy</strong></td>
<td>9 (13)</td>
<td>2013$</td>
<td>11.4%</td>
<td>8.7%</td>
<td>1.35 (1.00-1.82)</td>
</tr>
<tr>
<td>Hearing deficit</td>
<td>9 (13)</td>
<td>2005$</td>
<td>20.3%</td>
<td>15.1%</td>
<td>1.42 (1.18-1.78)</td>
</tr>
<tr>
<td>Cutaneous fibrosis</td>
<td>7 (10)</td>
<td>1643$</td>
<td>2.6%</td>
<td>2.1%</td>
<td>1.25 (0.67-2.32)</td>
</tr>
<tr>
<td>Trismus</td>
<td>7 (10)</td>
<td>1686$</td>
<td>0.5%</td>
<td>1.2%</td>
<td>1.36 (0.62-2.60)</td>
</tr>
</tbody>
</table>

OR = odds ratio. *Only trials having more than 60% of patients with available data were used for the analyses. †Computed rates (see Methods). ‡p values are summarised from appendix. §Only patients with a follow-up longer than 6 months were included in the analyses.
Plasma EBV-DNA
Plasma EBV DNA 6-8 weeks after RT is prognosis.

Cutoff: 500 copies/ml

Chan et al JNCI 2002
Honk-Kong NPC study group 0502 trial

Stage IIB-IVB
No distant metastases
Detectable EBV DNA at 6-8 weeks post-RT
Locoregional disease in CR

N = 104
Randomisation 1:1

Follow-up
Primary endpoint: Relapse-free survival
Cisplatin/gemcitabine (6 cycles)

Chan et al ASCO 2017
Honk-Kong NPC study group 0502 trial

HR = 0.92  
95% C.I. (0.51 – 1.66)  
P = 0.79
NRG-HNC001 NPC phase II-IIIR

EBV DNA

T ≥ 2b or N+

WHO I-III

REGISTER

IMRT (70 Gy) + CDDP (40 mg/m² weekly)

EBV DNA neg

Phase III

EBV DNA pos

Phase IIIR

R1

Observe

N = 632

CDDP + 5FU x3

N = 126

R2

Gem + Paclitaxel*

*Gem 1000 mg/m² d1,8 + Paclitaxel 80 mg/m² d1,8 every 21 d X 4 cycles
87 patients enrolled
Treatment of locally advanced NPC: take home message

- IMRT
- Plasma EBV DNA post-treatment is prognostic
- Concurrent chemoradiation (High-dose cisplatin or weekly) is standard of care
- Adjuvant chemotherapy may be necessary but its real contribution needs to be investigated further
- Induction chemotherapy has emerged as an alternative option, additional studies ongoing
Recurrent and/or metastatic NPC
Recurrent/metastatic NPC

• Around 30 % of patients will relapse

• Surgery and re-irradiation are potential treatment options

• Local control remains important

• Cisplatin doublets are standard first-line therapy
Recurrent/metastatic NPC: first-line

Cisplatin 80 mg/m² day 1 and Gemcitabine 1 gr/m² J1 and J8

Zhang et al Lancet 2016
Recurrent/metastatic NPC: second-line

- Paclitaxel
- Docetaxel
- Capecitabine or 5-FU
- Methotrexate
## Immune checkpoint inhibitors in R/M NPC

<table>
<thead>
<tr>
<th>Author</th>
<th>Number of patients</th>
<th>Agent</th>
<th>Response Rate %</th>
<th>1-year OS %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hsu et al</td>
<td>27</td>
<td>Pembrolizumab</td>
<td>26</td>
<td>63</td>
</tr>
<tr>
<td>Ma et al</td>
<td>44</td>
<td>Nivolumab</td>
<td>22</td>
<td>62</td>
</tr>
<tr>
<td>Delord et al</td>
<td>24</td>
<td>Nivolumab</td>
<td>21</td>
<td>74 (6 months)</td>
</tr>
</tbody>
</table>
Phase 3 of pembrolizumab in platinum pre-treated R/M NPC

KEYNOTE 122

Recurrent NPC
Platinum pre-treated
ECOG 0-1

N = 230
Randomisation 1:1

Pembrolizumab 200 mg IV / 3 weeks
Primary endpoint PFS and OS
Docetaxel, gemcitabine or capecitabine
## Targeted therapies in R/M NPC

<table>
<thead>
<tr>
<th>Author</th>
<th>Setting</th>
<th>Phase</th>
<th>N</th>
<th>Regimen</th>
<th>OR (%)</th>
<th>Median PFS or TTP (months)</th>
<th>Median OS (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chua</td>
<td>3rd line or beyond</td>
<td>Phase II</td>
<td>19</td>
<td>Gefitinib</td>
<td>0</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Ma</td>
<td>2nd line or beyond</td>
<td>Phase II</td>
<td>16</td>
<td>Gefitinib</td>
<td>0</td>
<td>2.7</td>
<td>12</td>
</tr>
<tr>
<td>You</td>
<td>2nd line</td>
<td>Phase II</td>
<td>20</td>
<td>Erlotinib after 6 cycles of GP</td>
<td>0</td>
<td>6.9</td>
<td>Not reached</td>
</tr>
<tr>
<td>Chan</td>
<td>2nd line</td>
<td>Phase II</td>
<td>60</td>
<td>Cetuximab+Carboplatin</td>
<td>11.7</td>
<td>2.7</td>
<td>7.8</td>
</tr>
<tr>
<td>Elser</td>
<td>2nd line</td>
<td>Phase II</td>
<td>27</td>
<td>Sorafenib</td>
<td>3.7</td>
<td>3.2</td>
<td>7.7</td>
</tr>
<tr>
<td>Xue</td>
<td>1st line</td>
<td>Phase II</td>
<td>54</td>
<td>Sorafenib+cisplatin+5-FU</td>
<td>77.8</td>
<td>7.2</td>
<td>11.8</td>
</tr>
<tr>
<td>Hui</td>
<td>2nd line or beyond</td>
<td>Phase II</td>
<td>13</td>
<td>Sunitinib</td>
<td>10</td>
<td>3.5</td>
<td>10.5</td>
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<tr>
<td>Lim</td>
<td>2nd line or beyond</td>
<td>Phase II</td>
<td>33</td>
<td>Pazopanib</td>
<td>6.1</td>
<td>4.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Hui</td>
<td>2nd line or beyond</td>
<td>Phase II</td>
<td>40</td>
<td>Axitinib</td>
<td>18.9</td>
<td>5</td>
<td>10.4</td>
</tr>
</tbody>
</table>
Phase 2 of autologous EBV cytotoxic T cells R/M NPC

N = 35 patients

ORR: 71.4%
Median OS = 29.9 months

Chia et al Mol Ther 2014
Phase 3 of autologous EBV cytotoxic T cells R/M NPC

R/M NPC
EBV-positive
Non-keratinizing and/or undifferentiated NPC

N = 330
Randomisation 1:1

Carboplatin/gemcitabine followed by T-cell immunotherapy of EBV autologous cytotoxic T cells
Primary endpoint = Overall survival

Carboplatin/gemcitabine
Recurrent/metastatic NPC: take home message

- Platinum/gemcitabine is the first-line standard of care

- Targeted therapies need further investigation

- Promising results with immune checkpoint inhibitors

- EBV-specific immunotherapy is investigated