Phase II trial: Concurrent chemotherapy and radiotherapy with nitroglycerin in locally advanced non-small cell lung cancer patients.

Background:

The treatment of choice for locally advanced non small cell lung cancer (NSCLC) is concurrent chemoradiation (CRT). However, efforts to improve treatment results include targeted therapy and the use of radiosensitizers. Nitroglycerin (NTG), a nitric oxide (NO) donor agent, reduces expression of Hypoxia-Induced Factor, which is associated to both chemo and radio resistance (fig. a y b).

Material & Methods

This is phase II trial in patients with locally advanced NSCLC treated with chemotherapy (CT) based on cisplatin and vinorelbine with NTG concurrent with radiation therapy. A 25 mg NTG patch was administered to the patients during the first 5 days of each induction treatment cycle and during chemoradiotherapy. Blood samples of VEGF were taken before any treatment and after two cycles of CT.

Results

- 35 patients were enrolled in this trial. Median Follow up was 16.6 months (SD ±13.6).
- Sixty-four per cent of patients achieved partial response after CT and 75.8% after CRT.
- PFS was 11.7 months (95% CI 0.27-9.79) (fig. 1) and OS was 42.9 months (95%CI 24.5-60.4) (fig. 2A).
- Stage and response to treatment were statistically significant factors related to OS. (fig. 2B, 2C).
- After two cycles of CT, plasma VEGF levels were significantly lower (Median 132±79 vs. 53±78 pg/ml, p<0.001).
- No differences on PFS and OS were found between patients with a reduction ≥ 93 pg/ml (median of differences between VEGFR before and after chemotherapy) (fig. 2D).

Conclusions

- The addition of NTG to induction CT, and concurrent CRT on locally advanced NSCLC patients seems to increase the response rate, PFS and OS with an acceptable toxicity profile.
- A prospective trial is warranted to confirm these findings.

Authors: Mónica Blake, Dolores de la Mata, Jesús Zamora Moreno, Omar Pena, Omar Macedo, Diana Flores-Estrada, Jenny Turcott, Jorge Alatorre, Oscar Arrieta

**Figure 1**: Schematic representation of VEGF levels before and after NTG treatment.