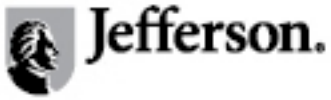

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830P Synthetic DNA immunotherapy in biochemically relapsed prostate cancer

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Background: INO-5150 (PSA and PSMA) +/- INO-9012 (IL-12), a synthetic DNA immunotherapy, was assessed for safety, immunogenicity and efficacy in biochemically recurrent prostate cancer patients (pts).

Methods: Phase I, open-label, multi-center study in the US included pts with rising PSA after surgery and/or RT, PSA doubling time (PSADT) >3 months (mos), testosterone >150 ng/dL and no concurrent ADT. Safety, immunogenicity and efficacy (PSA kinetics, PFS) were evaluated in 4 treatment arms of 15 pts each. Arms A: 2mg INO-5150, B: 8.5 mg INO-5150, C: 2mg INO-5150 + 1mg INO-9012 and D: 8.5mg INO-5150 + 1mg INO-9012. Pts received 4 IM doses of vaccine followed by electroporation on day 0, wks 3, 12 and 24 and were followed for 72 wks.

Results: 50/61 (82%) pts completed all visits and treatments were well tolerated with no safety concerns. Median PFS for overall population [N = 61, baseline (D0) PSADT range (mos) 1.5-217.1, median 9.8] and for a subset of pts with D0 PSADT ≤12mos (N = 36) has not yet been reached (FU 3-19 mos). 86% of pts with D0 PSADT ≤12 mos were progression free through 19mos FU. 27 out of 36 (75%) pts with D0 PSADT≤ 12 mos had disease stabilization at wks 27 evidenced by significant improvement in log_2PSA change over time (slope) and PSADT from D0 (Slope=0.19 declined to 0.1, PSADT=5.3 improved to 10.1 mos, p = <0.0001). This effect was maintained at wk 72 (Slope=0.09, PSADT=10.6, p = <0.0001). Immunogenicity was observed in 77% (47/61) of pts by multiple immunologic assessments. Patient immunogenicity to INO-5150 as determined by CD38 and Perforin + CD8 T cell immune reactivity correlated with attenuated % PSA rise compared to pts without reactivity (p = 0.05, n = 50).

Conclusions: INO-5150 +/- INO-9012 was safe, well tolerated and immunogenic. Clinical efficacy was observed in the patients with D0 PSADT≤ 12 mos as evidenced by a significant dampening of log_2PSA change over time and increased PSADT up to 72 weeks FU. Additional genomic analyses are ongoing to further elucidate the correlation of immunologic efficacy and clinical benefit. (NCT02514213).

Clinical trial identification: FDA IND number 15870.

Legal entity responsible for the study: Inovio Pharmaceuticals, Inc.

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