EGFR MUTATIONS IN NON-SMALL CELL LUNG CANCER IN SOUTH AFRICA

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Aim: The discovery of activating EGFR mutations sensitive to tyrosine kinase inhibitors (TKI) has changed the treatment approach in patients with non-small cell lung cancer (NSCLC) globally. There is no published data concerning EGFR mutations in NSCLC in South Africa to date. This study described factors associated with EGFR mutations, estimated mutation rate and documented mutation patterns in South African patients.

Methods: Retrospective review of records was performed on patients with a diagnosis of NSCLC, referred from various oncology practices in South Africa, who had centralized EGFR mutational analysis performed on histology samples between 1 September 2009 and 30 June 2012. Treatment practices and therapeutic responses were also described.

Results: 170 NSCLC samples were evaluable for EGFR mutational analysis in which 37 were mutation positive (22%). There were 22 exon 19 deletions (60%), 11 L858R mutations (30%), two G719X mutations, one S768I mutation and one exon 20 insertion. The median patient age was 63 (range 27-85) with mutation testing being conducted more in females (56%) than in males (44%). 120 patients were Caucasians, 31 Africans and 18 other races comprising mixed ethnicity and Asians. EGFR mutation rate was 18% in Caucasians, 23% in Africans and 39% in other races. 85% of all NSCLC samples tested were adenocarcinoma on histology. Smoking status was inversely proportional to EGFR mutation status (p = 0.000047). In first-line treatment, 64 patients received platinum-doublet chemotherapy and 4 patients received TKI with objective response rate (ORR) overall being 56%. In second-line treatment, 24 patients received single-agent chemotherapy and 4 patients had TKI with ORR overall being 24%.

Conclusions: Based on this limited data set with selection bias in favour of female, non-smokers with adenocarcinoma, the estimated EGFR mutation rate in South African NSCLC patients was 22% with 90% of all mutations being either exon 19 deletions or L858R point mutations. Most EGFR mutations were found in non-smokers with adenocarcinoma. These findings are consistent with current incidence in most western countries. Efforts should be made to prioritize targeted treatment approaches in NSCLC patients in South Africa especially non-smokers with adenocarcinoma.

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