Detection of NTRK fusions in a series of Brazilian patients diagnosed with non-small cell lung cancer.

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Introduction: NTRK fusions present a promising therapeutic target for NSCLC patients, but their prevalence in admixed populations is unclear. RNA-based next-generation sequencing (NGS), immunohistochemistry, and RNA-based nCounter are commonly used for detection, but there are differences in the effectiveness of each technique for detecting NTRK fusions. This study aimed to evaluate the frequency and concordance of positive samples for NTRK fusions using these methods. Methods: A total of 135 patients diagnosed at Barretos Cancer Hospital with NSCLC and routinely indicated for NTRK fusion detection by immunohistochemistry were included in the study. Positive samples were confirmed using the RNA-based NGS panel Archer FusionPlex solid tumor and the RNA-based panel nCounter Elements XT. Results: Of the 135 patients, 13 (9.6%) were positive for NTRK fusions by immunohistochemistry. RNA-based NGS and nCounter could be performed in 54% and 46% of positive samples, respectively. The concordance rate between immunohistochemistry and RNA-based NGS was 28.6%, and between immunohistochemistry and nCounter was 33.4%. Comparing samples analyzed in RNA-based NGS and nCounter, all were in agreement. The frequency of NTRK fusions in our series was 1.5% in samples positive for NTRK fusions in all techniques. Conclusion: These findings indicate that approximately 1.5% of Brazilian NSCLC patients harbor NTRK fusions and may benefit from targeted therapies. Using multiple methods can improve detection rates.