

**KIRSTEN RAT SARCOMA VIRAL ONCOGENE HOMOLOG (KRAS) GENE
MUTATION PROFILE IN PATIENTS WITH THYROID CANCER**

ABSTRACT

Background

Thyroid cancer is one of the most common endocrine-related malignancy. One of the main causes of thyroid cancer is a mutation, in which a proliferative gene like Kirsten rat sarcoma viral oncogene homolog (KRAS) may also be involved in. Although thyroid cancer generally has low mortality in its course of disease, the fact that cases are increasing each year is inevitable. There have been few studies regarding KRAS mutation in thyroid carcinoma in Indonesia.

Objective

To investigate the mutation profile of KRAS mutation in patients with thyroid cancer in Department of Anatomical Pathology, Faculty of Medicine, Universitas Gadjah Mada.

Method

An observational study with descriptive research design is done using paraffin block of all types of thyroid carcinoma in patients that were diagnosed during 2010 to 2014 in Department of Anatomical Pathology, Faculty of Medicine, Universitas Gadjah Mada.

Result

Thyroid cancer was most frequently found in women (87.5%) compared to men (12.5%) and Papillary Thyroid Carcinoma (PTC) comprises nearly 78.0% of all thyroid carcinoma types. KRAS mutation was found approximately at 40% of all subjects with p.G12D as the most frequent amino acid change.

Conclusion

The incidence rate of KRAS mutation in this study is comparatively high, mainly harbored by the amino acid change in codon 12, from glycine into aspartic acid. PTC was found to be dominant among other types of thyroid carcinoma.

Keywords

Indonesia, thyroid cancer, KRAS, KRAS mutation profile, targeted therapy, Papillary Thyroid Carcinoma

**PROFIL MUTASI GEN KIRSTEN RAT SARCOMA VIRAL ONCOGENE
HOMOLOG (KRAS) PADA PASIEN KANKER TIROID**

INTISARI

Latar Belakang

Kanker tiroid adalah salah satu kanker endokrin yang paling sering ditemukan. Salah satu penyebab dari kanker tiroid adalah mutasi pada gen proliferasif seperti gen Kirsten rat sarcoma viral oncogene homolog (KRAS). Meskipun angka mortalitas kanker tiroid dalam perjalanan penyakitnya cenderung rendah, fakta bahwa meningkatnya jumlah kasus kanker tiroid setiap tahunnya tidak dapat terelakkan. Penelitian mengenai mutasi gen KRAS dalam perkembangan kanker tiroid masih jarang dilakukan di Indonesia.

Tujuan

Untuk menyelidiki profil mutasi gen KRAS pasien kanker tiroid di Departemen Patologi Anatomi, Fakultas Kedokteran, Universitas Gadjah Mada

Metode

Studi observasional dengan desain penelitian deskriptif dilakukan dengan menggunakan blok parafin pasien dari berbagai tipe karsinoma tiroid yang telah didiagnosis pada tahun 2010 - 2014 di Departemen Patologi Anatomi, Fakultas Kedokteran, Universitas Gadjah Mada.

Hasil

Karsinoma tiroid ditemukan lebih banyak pada wanita (87.5%) daripada pria (12.5%) dan tipe papiler (PTC) mendominasi tipe karsinoma tiroid yang ditemukan sebanyak 78.0% dari semua tipe karsinoma tiroid. Mutasi gen KRAS ditemukan sebanyak 40% dari seluruh subjek dengan p.G12D sebagai lokasi perubahan asam amino tersering.

Kesimpulan

Tingkat kejadian mutasi gen KRAS di dalam studi ini cukup tinggi, terutama didominasi oleh perubahan asam amino pada kodon 12, dari glisin menjadi asam

aspartat. PTC ditemukan mendominasi semua tipe karsinoma tiroid pada studi ini.

Kata Kunci

Indonesia, kanker tiroid, KRAS, profil mutasi KRAS, terapi target, Karsinoma tiroid tipe papiler