

## INTISARI

**Latar belakang:** Karsinoma nasofarings (KNF) merupakan kanker yang paling sering muncul di daerah kepala dan leher dan di Indonesia memiliki insidensi sebesar 5,6 per 100.000 penduduk per tahunnya. Kejadian KNF dipengaruhi oleh beberapa faktor risiko. Salah satu faktor risiko internal berupa polimorfisme gen *CLPTM1L/TERT* dan paparan asap lingkungan termasuk faktor risiko eksternal.

**Tujuan:** Mengetahui hubungan antara polimorfisme gen *CLPTM1L/TERT* dan paparan asap lingkungan berupa asap rokok dan kayu bakar dengan risiko KNF.

**Metode:** Penelitian ini menggunakan rancangan penelitian kasus kontrol berbasis rumah sakit. Subyek yang terlibat dalam penelitian ini sebanyak 150 untuk kelompok kasus dan 150 untuk kelompok kontrol. Polimorfisme gen *CLPTM1L/TERT* rs31489 diperiksa dengan menggunakan metode ARMS-PCR. Data demografi dan paparan didapat dari kuisioner. Distribusi karakteristik demografi subyek penelitian dianalisis menggunakan uji *chi-square*. Analisis hubungan dilakukan dengan uji regresi logistik.

**Hasil:** Kelompok kasus lebih banyak yang berusia di atas 50 tahun dibandingkan kelompok kontrol dengan jumlah laki-laki yang lebih banyak dan mayoritas berasal dari suku Jawa. Tingkat pendidikan kelompok kontrol lebih tinggi dibandingkan dengan kelompok kasus ( $p = 0,001$ ). Sebagian besar pasien KNF memiliki tipe histologi WHO tipe III (92%) dan berada di stadium IV (68%). Populasi dengan alel CA (OR = 0,73; 95%CI = 0,45-1,21) dan alel AA (OR = 0,97; 95%CI = 0,43-2,18) berefek protektif terhadap risiko KNF. Paparan asap rokok di rumah (OR = 1,68; 95% CI = 1,03-2,73), asap rokok di lingkungan kerja (OR = 2,32; 95%CI = 1,46-3,69), dan asap kayu bakar (OR = 1,95; 95%CI = 1,21-3,13) dengan frekuensi 1-3 kali dalam sebulan sampai tiap hari meningkatkan risiko terkena KNF. Paparan asap rokok di lingkungan kerja atau asap kayu bakar dengan frekuensi 1-3 kali dalam sebulan sampai tiap hari dan alel AA meningkatkan risiko terkena KNF (OR = 1,53; 95%CI = 0,41-5,712; OR = 1,02; 95%CI = 0,40-2,61). Namun bersifat protektif pada alel AA dan paparan asap rokok di rumah. (OR = 3,95; 95%CI 0,27-1,90).

**Kesimpulan:** Alel mutan heterozigot (CA) dan homozigot mutan (AA) bersifat protektif terhadap kejadian KNF. Paparan asap rokok di rumah, lingkungan kerja, dan asap kayu bakar dengan frekuensi 1-3 kali sebulan sampai tiap hari meningkatkan risiko kejadian KNF secara berurutan sebesar 1,64; 2,53; dan 1,89 kali. Alel homozigot mutan (AA) dan paparan asap rokok di lingkungan kerja atau asap kayu bakar dengan frekuensi 1-3 kali sebulan sampai tiap hari meningkatkan risiko kejadian KNF, sedangkan berefek protektif pada alel homozigot mutan (AA) dan paparan asap rokok di rumah.

**Kata kunci:** karsinoma nasofarings, KNF, polimorfisme gen *CLPTM1L/TERT*, asap rokok, asap kayu bakar, ARMS-PCR

## ABSTRACT

**Background:** In Indonesia, Nasopharyngeal Carcinoma (NPC) consider as most common malignancy in head and neck region with an incidence at 5,6 per 100.000. The incidence of NPC is influenced by several factors. *CLPTMIL/TERT* gene polymorphism is one of the internal risk factor and exposure to environmental smoke is one of the external risk factor.

**Objectives:** To analyze the association between *CLPTMIL/TERT* gen polymorphism rs31489, exposure to environmental smoke such as cigarette smoke in the house, in the working place, and firewood smoke and the risk of nasopharyngeal carcinoma.

**Method:** The study used nested hospital-based case control study design. Subjects was included 150 case subjects and 150 control subjects. *CLPTMIL/TERT* gen polymorphism rs31489 was identified using ARMS-PCR. Subjects characterization was analyzed using chi-square. The association among populations was then analyzed using logistic regression.

**Result:** The age in the case group were older compared to the control group, with male as the predominant gender, and most of them were originally Javanese. Control group had higher education compared to the case group ( $p = 0.001$ ). Most KNF patients had WHO type III histology (92%) and were in stage IV (68%). CA allele (OR = 0.73, 95% CI = 0.45-1.21) and AA allele (OR = 0.97; 95% CI = 0.43-2.18) had a protective effect against the risk of NPC. Exposure to cigarette smoke at home (OR = 1,68; 95% CI = 1,03-2,73), cigarette smoke in working place (OR = 2,32; 95CI = 1,46-3,69), and firewood smoke (OR = 1,95; 95% CI = 1.21-3.13) with frequency 1-3 times in a month to everyday increased the risk of KNF. Exposure to cigarette smoke in working place or fire wood smoke at frequency of 1-3 times a month to everyday and AA allele increased the risk of NPC (OR = 1.53; 95% CI = 0,41-5.712; OR = 1.02; 95% CI = 0.40-2.61). Meanwhile, had protective effect in exposure to cigarette smoke at home with frequency of 1-3 times in a month to everyday (OR = 3.95, 95% CI 0.27-1.90).

**Conclusion:** Mutant heterozygous allele (CA) and homozygous allele (AA) were protective against risk of NPC. Exposure to cigarette smoke at home, at working place, and firewood smoke 1-3 times a month to everyday increased the risk of NPC by 1,64; 2,53; and 1,89 times respectively compared to never to less than once of exposure per month. Mutant homozygous allele (AA) and exposure to cigarette smoke at home with frequency 1-3 times a month until everyday had protective effect against risk of NPC. Mutant homozygous allele (AA) and exposure to cigarette smoke in working place or firewood smoke with frequency 1-3 times a month to everyday increased the risk of NPC.

**Keywords:** nasopharyngeal carcinoma, NPC, *CLPTMIL/TERT* polymorphism, cigarette smoke, firewood smoke, ARMS-PCR