

Molecular characterization of lung cancer by DNA methylation profile

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2005 Fiscal Year Final Research Report Summary

Molecular characterization of lung cancer by DNA methylation profile

Research Project

Project/Area Number

16591386

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Thoracic surgery

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

2004 - 2005

Keywords

lung cancer / molecular oncology / DNA methylation

Research Abstract

Despite recent advances in cancer therapy, lung cancer remains one of the major causes of cancer death worldwide. Therefore, precise methods for prediction of prognosis are required for optimal selection from among the available modalities of lung cancer therapy. In this study, DNA methylation profile of tumor and normal tissue in lung cancer was analyzed to make use of the profile for personalized medicine in the treatment of this disease.

The method of real-time methylation specific PCR (MethyLight) from formalin-fixed paraffin-embedded tissue was established. DNA was isolated from 350 matched tumor and adjacent normal tissue, followed by MethyLight assay on p16, hMLH1, APC, MGMT, DAPK, MYOD1, TIMP3. Frequencies of the hypermethylation in tumor (T) and normal tissue (N) were as follows : p16(T), 14.1% ; p16(N), 1.8% ; hMLH1(T), 0.7% ; hMLH1(N), 0% ; APC(T), 24.8% ; APC(N), 8.8% ; MGMT(T), 67.2% ; MGMT(N), 87.5 ; DAPK(T), 1.6% ; DAPK(N), 3.6% ; MYOD1(T), 42.2% ; MYOD1(N), 34.4% ; TIMP3(T), 3.1% ; TIMP3(N), 3.6%. Hypermethylation of p16 was more frequent in male and squamous cell carcinoma. Contrary, APC hypermethylation was more frequent in adenocarcinoma. In survival analysis with 240 patients, hypermethylation of p16 and MYOD1 were significant poor prognostic factor.

These results suggest that the DNA methylation profile in lung cancer is useful for personalized medicine in the treatment of lung cancer patients.

Research Products (5 results)

All	2006	2005	2004
All	Journal Article		

- [Journal Article] In vitro sensitivity to platinum-derived drugs is associated with expression of thymidylate synthase and dihydropyrimidine dehydrogenase in human lung cancer. **2006** ▾
- [Journal Article] In vitro sensitivity to platinum-derived drugs is associated with expression of thymidylate synthase and dihydropyrimidine dehydrogenase in human lung cancer. **2006** ▾
- [Journal Article] The profile of hMLH1 methylation and microsatellite instability in colorectal and non-small cell lung cancer. **2005** ▾
- [Journal Article] Prognostic Significance of the Polymorphisms in Thymidylate Synthase and Methylenetetrahydrofolate Reductase Gene in Lung Cancer. **2005** ▾
- [Journal Article] Thymidylate synthase gene in pharmacogenetics. **2004** ▾

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