

SUMMARY OF THE INVENTION

[0005] In a first aspect, there is provided a method for determining the risk of early toxicity-necessitated treatment termination in a patient with cancer during receptor tyrosine kinase inhibitor therapy, comprising:

- a) isolating a nucleic acid sample from a biological sample obtained from the said patient;
- b) screening for the SNP genotype of rs1128503, and
- c) determining the risk of early toxicity-necessitated treatment termination based on the genotyping result obtained in step (b).

[0006] In a second aspect, there is provided a use of the method as described herein to identify the most appropriate receptor tyrosine kinase inhibitor therapy regimen for a patient with renal cancer.

[0007] In a third aspect, there is provided a kit for use according to the method as described herein, comprising components for the screening of said nucleic acid sample for the SNP genotype of rs1128503.

DEFINITIONS

[0008] The following words and terms used herein shall have the meaning indicated:

[0009] The term subject refers to living, multicellular vertebrate organisms, a category that includes both human and veterinary subjects for example, mammals, birds and primates.

[0010] The term nucleic acid refers to a deoxyribonucleotide or ribonucleotide polymer in either single or double stranded form, and unless otherwise limited, encompassing known analogues of natural nucleotides that hybridize to nucleic acids in a manner similar to naturally occurring nucleotides.

[0011] The term polymorphism refers to a variant in a sequence of a gene, usually carried from one generation to another in a population. Polymorphisms can be those variations (nucleotide sequence differences) that, while having a different nucleotide sequence, produce functionally equivalent gene products, such as those variations generally found between individuals, different ethnic groups, geographic locations. The term polymorphism also encompasses variations that produce gene products with altered function, i.e., variants in the gene sequence that lead to gene products that are not functionally equivalent. This term also encompasses variations that produce no gene product, an inactive gene product, or increased or increased activity gene product.

[0012] Polymorphisms can be referred to, for instance, by the nucleotide position at which the variation exists, by the change in

CLAIMS

1. A method for determining the risk of early toxicity-necessitated treatment termination in a patient with cancer during receptor tyrosine kinase inhibitor therapy, comprising:
 - a) isolating a nucleic acid sample from a biological sample obtained from the said patient;
 - b) screening for the SNP genotype of rs1128503, and
 - c) determining the risk of early toxicity-necessitated treatment termination based on the genotyping result obtained in step (b).
2. The method according to claim 1, wherein the cancer is renal cancer, neuroendocrine cancer, breast cancer, prostate cancer, cervical cancer, ovarian cancer, gastric cancer, colorectal cancer, pancreatic cancer, liver cancer, brain cancer, lung cancer, hematological malignancies, melanoma and sarcomas.
3. The method according to claim 2, wherein the renal cancer is metastatic renal cell carcinoma (mRCC).
4. The method according to claim 2, wherein the patient suffers from mRCC or wherein the patient suffers from mRCC and undergoes receptor tyrosine kinase inhibitor treatment.
5. The method according to claim 1, wherein the biological sample is obtained from the group consisting of frozen tissue, tissue biopsies, circulating cells, bodily fluids and cheek swab.
6. The method according to claim 5, wherein the biological sample is non-neoplastic.
7. The method according to claim 5, wherein the biological sample is neoplastic.
8. The method according to claim 4, wherein the bodily fluids are selected from the group consisting of blood, saliva, ascites, effusions and urine.

9. The method according to claim 1, wherein the receptor tyrosine kinase inhibitor is a multikinase inhibitor for receptor tyrosine kinase including but not limited to sunitinib, pazopanib, axitinib, sorafenib, regorafenib, tivantinib or combinations thereof.
10. The method according to claim 1, wherein the patient is a mammal or a human.
11. The method according claim 10, wherein the human is an ethnic Asian, or an ethnic Caucasian, or an ethnic African.
12. The method according to claim 1, wherein in step (c), the risk of early toxicity-necessitated treatment termination during receptor tyrosine kinase inhibitor treatment is higher for a CC or CT genotype than a TT genotype.
13. Use of the method according to claim 1 to identify the most appropriate receptor tyrosine kinase inhibitor therapy regimen for a patient with renal cancer.
14. A kit for use according to the method of claim 1, comprising components for the screening of said nucleic acid sample for the SNP genotype of rs1128503.