Genome-wide sequencing for the identification of potential genomic denominators between tumorgenesis factors in neuroblastoma and differentiated thyroid carcinoma in children

Published: 16-01-2014
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To detect potential genomic denominators between tumorgenesis factors in neuroblastoma and differentiated thyroid carcinoma.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Thyroid gland disorders
Study type	Observational invasive

Summary

ID

NL-OMON40506

Source
ToetsingOnline

Brief title
Genetic research into thyroid cancer

Condition

- Thyroid gland disorders

Synonym
differentiated thyroid carcinoma, Thyroid cancer

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: NutsOhra

Intervention

Keyword: 131-I-MIBG, Genome-wide sequencing, Neuroblastoma, Thyroid carcinoma

Outcome measures

Primary outcome

To identify variants and structural variations that determine increased risk

for secondary thyroid cancer. De novo germline aberrations as well as germline

aberrations compared to the reference genome will be identified. In addition we

will determine the somatic variants found in the tumor sample.

Secondary outcome

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Study description

Background summary

Recently, three neuroblastoma (NBL) survivors have been diagnosed with papillary thyroid carcinoma in our center. All of them had received treatment with 131I-MIBG. It has been extensively described that exposure to 131I ¯ may result in thyroid damage, such as hypothyroidism, nodules and differentiated thyroid carcinoma (DTC). To prevent uptake of radio-iodide into the thyroid gland during 131I-MIBG treatment, NBl patients are given thyroid protection Of the 3 patients here described, 2 patients had received potassium-iodide (KI) during MIBG administration and 1 patient was given a combination drug protection consisting of KI, Methimazole and L-thyroxine (dilute, block and replace (DBR).
On the MIBG scans of these 3 children, no uptake of radio-iodide was seen in the thyroid gland during exposure to MIBG. For this reason, other causes than radiation damage for DTC to occur in these children must be considered, such as genetic predisposition. Another argument that may support this hypothesis is the fact that after external radiation, DTC is more often diagnosed in NBL

survivors than in other childhood cancer survivors. We hypothesize that children with NBL are inherently at an increased (genetic) risk to develop DTC, irrespective of previous radiation exposure.

Study objective

To detect potential genomic denominators between tumorgenesis factors in neuroblastoma and differentiated thyroid carcinoma.

Study design

Observational study into the existence of genomic denominators between tumorgenesis factors in neuroblastoma and differentiated thyroid carcinoma (through whole genome sequencing).

Study burden and risks

Burden/risk/benefits:
The risk for the probands in this study (children and parents) is considered minimal. During a vena puncture blood with be withdrawn for whole-genome sequencing. Patients and their parents will get genetic counseling prior to whole genome sequencing. Important issues to discuss include:
- Basic genetics (cells, genes, chromosomes, mutations etc.)
- (Incidental) findings

Group relatedness:
Because of the fact that neuroblastoma only occur during childhood, research to the identification of potential genomic denominators between tumorgenesis factors in neuroblastoma and differentiated thyroid carcinoma has to be performed in children, thereby involving minors.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Adults (18-64 years)
Children (2-11 years)
Elderly (65 years and older)

Inclusion criteria

Neuroblastoma patients treated with 131I-MIBG who developed differentiated thyroid carcinoma (and their parents <= control group)

Exclusion criteria

Treatment with external irradiation

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active

Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	31-01-2014
Enrollment:	9
Type:	Actual

Ethics review

Approved WMO

Date:	16-01-2014
Application type:	First submission
Review commission:	METC Amsterdam UMC

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL47101.018.13