Review

Cross-effects of neurofibroma type I

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Abstract

I statistically analyzed 40 examples of neurofibromatosis type 1. Since before it has been said that the neurofibromatosis type 1 originated from mother is very serious. It is called "maternal effect". It has been said since 1930's. But many are against the opinion. The result of my examination is as follows.

The case from mother or father were more serious and self-originated cases were less.

The male case from mother and the female case from father have extremery much possibility of having malignant tumors.

The female case from mother, the male case from father, the case from self didn't have malignant tumors. They were all benign.
"When the tumor is found in the male case originated from mother or female case originated from father, it is very possible that the tumor is malignant."

I newly name it "cross effect".

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**key words**: neurofibromatosis type 1, cross effect, maternal effect, malignant tumor

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**Introduction**

Since the 1930s, it has been said that male patients with maternal neurofibroma type 1 are severely affected and if a tumor is found, it is very likely to be a malignant tumor. When I wrote the statistics of 40 cases of neurofibroma type 1, it is clear that a male patient with maternal neurofibroma type 1 was severely affected, and if a tumor was found, it was very likely to be malignant. Turned out to be high. Similarly, female patients with neurofibromatosis type 1 from the father were also severe, and if found, had a very high probability of being malignant. It turned out that female patients of maternal origin, male patients of paternal origin, and the proband with their own neurofibromas type 1 were rarely severe and could not be
malignant if a tumor was found. However, this is a study of the 40 cases collected by the author, and requires further examination.

Case
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[The following is a male example from a mother]

<< Case 1 >> Derived from mother. male. 38 years old.
Neurofibromas are slight but have bone defects in the occipital bone. Innate, healthy. Iris nodule (+).
Nystagmus appeared during fatigue last September. In October, nystagmus becomes stronger. Head CT shows a tumor in the cerebellar hemisphere. Craniotomy tumor resection was performed. Pathologically, it was glioblastoma multiforme. No abnormalities were found by chromosome examination.
He had two brothers, a brother with neurofibromatosis type 1, but at the age of 43, he returned to work after a day when he returned from work after feeling very tired and slept on a futon but died in the evening. Was discovered. The cause of death was cleared up for heart failure. He was also healthy by nature, and had no indication of heart disease. No dissection was performed to determine the cause of death. It is likely that his brother was also a cerebellar or brainstem tumor.
<< Case 2 >> Derived from mother. male. 24-years-old.
Café au lait spots on the back and buttocks since childhood. Iris nodule (+).
Head CT was performed on October 2, 1984, and no special findings were noted. Brain waves are not to be noted. Soft mass (—).
The older brother, 2 years old, has an intelligence index of 32 (sb formula).
He died while trying to get up in the morning at the age of 12 while in a nursing home. Dissection revealed malignant schwannoma of the brainstem.

<< Case 3 >> From the mother. male. 19 years old.
From the childhood, remove the tumor in the bottom of the left orbit four times. Iris nodule (+).
On November 13, 1987, the right supraclavicular tumor was removed. Pathologically, it was malignant astrocytoma.
On December 7, 1987, a tumor was removed from the right elbow joint. Similarly, it was a malignant astrocytoma.
On January 10, 1988, the left orbital tumor was removed. This was also a malignant astrocytoma.
This time, I was introduced to a university hospital for the purpose of reducing the cerebral aneurysm associated with the loss of the left orbital wing.
<< Case 4 >> Derived from mother. male. 33 years old.
The mother has several small café au lait spots (it appeared at the age of 40).
Surgery was performed due to dislocation of the hip joint.
There is a tumor in the right cerebellar hemisphere. Iris nodule (+). Bone defect in right lower occipital region. Right occipital bulge. The left side is almost completely blind. Craniotomy revealed pathological malignant astrocytoma (grade 3).

<< Case 5 >> From the mother. male. 7 years old.
Five siblings. Three older sisters are healthy. His brother died at the age of one from pneumonia to meningitis.
Congenital aqueduct obstruction, unknown cause. Iris nodule (+). There is bilateral vision loss, and vision loss tends to progress.

<< Case 6 >> From the mother. male. 1 year old.
Psychomotor retardation, congenital heart disease, iris nodule (+).
Many café au lait spots on lower body immediately after birth.
CTHead CT showed cerebral atrophy (+) and tumor (-).
Two brothers. My older sister had brown spots (4 x 4 cm) on the left hip.

<< Case 7 >> Derived from mother. male. 14 years old.
Since childhood, left fibula pseudoarthrosis. Iris nodule (+). At the age of 14, she complained of dizziness and visited the hospital. Head CT shows
tumor in left cerebellar hemisphere. Craniotomy tumor removal was performed at a university hospital. Pathologically, it was glioblastoma multiforme.

<< Case 8 >> Derived from mother. male. 11 years old. There are café au lait spots on the three younger brothers (two younger sisters) and the younger sister. He visited our hospital about 2 years ago because of nausea and headache. On the CT of the head, there was a tumor that appeared to be astrocytoma on the left temporal parietal region. The tumor grows in size and is referred to a university hospital. Craniotomy performed. The pathological finding was malignant astrocytoma. Iris nodule (+).

<< Case 9 >> Derived from mother. male. 23 years old. café au lait spots occur throughout the body from birth. There is a soft mass under the back. He was diagnosed with neurofibroma type 1 at a biopsy last year. Iris nodule (+). At the age of 23, he notices the presence of a brain tumor on head CT. Tumor size is increasing. Schedule for craniotomy.

[The following are examples of women from mothers]

<< Case 10 >> Derived from mother. Woman. 23 years old.
Three females and one male child. Two older sisters are healthy. Right acoustic nerve tumor. Pathologically benign tumor. Both sides blind. Left and right olfactory deficits. My brother died of a spinal cord tumor at the age of 15 (this brother also has neurofibromatosis type 1).

<< Case 11 >> Derived from mother. Woman. 42 years old. Simple masses and café au lait spots occur throughout the body since childhood. Café au lait spots on all three children (one male and two female).

<< Case 12 >> From the mother. Woman. 43 years old. Bilateral congenital hip dislocation. There are more than a dozen café au lait spots on the trunk.

<< Case 13 >> Derived from mother. Woman. 38 years old. Cerebral palsy, neuropathic bladder. I was able to walk alone until junior high school. At the age of 37, he developed back pain and became paralyzed in both lower limbs. CT showed a tumor shadow in the lumbar spine. Pathologically benign tumor.

<< Case 14 >> Derived from mother. Woman. 29 years old. Eight years ago, a soft mass appeared in the right iliac bone and he underwent resection. Pathologically benign tumor.
5 years ago, a soft mass with tenderness appeared on the flexed side of the right upper arm.

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[The following is a male example from father]

<< Case 15 >> Derived from the father. male. 27 years old.
When you are a junior high school student, you notice that there is a soft mass on the trunk. After that, the number gradually increased, so we visited our hospital 9 years ago and were diagnosed with neurofibroma type 1. My sister died of childhood asthma.
No abnormalities in head CT. Cauda equina tumor present. The cauda equina tumor was pathologically a benign tumor.

<< Case 16 >> Derived from father. male. 32 years old.
3 Three siblings (all male) have absence seizures.
There is a tumor shadow on the right side of the head CT. Craniotomy was a benign astrocytoma.

<< Case 17 >> Derived from father. male. 31 years old.
Left pulsatile astigmatism, left orbital bone defect.

<< Case 18 >> Derived from father. male. 18 years old.
Bone defect (3.5 × 3.5cm) on midline of occiput. Language disorders since childhood.

Visit to the medical examination for SDF enlistment.

<< Case 19 >> Derived from father. male. 2 years old.
Right Turkish saddle enlarged (J type). Enlargement of the right middle ear canal. Elevation of right pterygium.
Enlargement of the right eye nerve tract. Enlarged orbit.

<< Case 20 >> Derived from the father. male. 11 months.

<< Case 21 >> From the father. male. 10 years old.
More than a dozen café au lait spots appear on the trunk and limbs from one month after birth. There is no increase in the number and size of café au lait spots. Neurofibromas appeared on the entire back, centered on the lumbar region one year ago, but began to regress from around summer (natural regression). At the time of our first visit to our hospital (September 5, 1992), the swelling slightly increased in the lumbar region. There were only six soft tumors. At the time of hospitalization (December 16, 1992), the same site had almost disappeared to the extent that it could not be confirmed.
We are hospitalized this time for various tests for neurofibroma. No special note on head CT.
Cafe au lait spot on father. My brother has two older sisters, but there is no abnormality at present.

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[The following is an example of a woman from her father]

<< Case 22 >> Derived from the father. Woman. 34 years old.
I noticed café au lait spots when I was little. However, there were few café au lait plaques and almost no soft masses. Iris nodule (+). Visited our hospital for headache. Bone defect was not clear, but tumor was present in left cerebellar hemisphere. University hospital introduction. Craniotomy was performed, but pathologically, malignant astrocytoma was found. He died after surgery.

<< Case 23 >> Derived from the father. Woman. 21 years old.
Pain in the right head and right occipital region from around October 1992. Nausea when pain is severe, radiation pain to right shoulder. No abnormalities were recognized on the head CT. Diagnosis of neurofibroma of the right cervical spine. Iris nodule (+).
In 1992, a CT scan revealed a suspected astrocytoma in the left parietal region. The tumor grew in size and craniotomy was performed. Pathologically malignant astrocytoma.
<< Case 24 >> Derived from father. Woman. 28 years old.
Cafe au lait plaques since childhood, and hemispherical soft tumor masses increased systematically from the age of 16 and began to increase. Iris nodule (+). Right ear mixed hearing loss.
Stenosis in the rectum. But a tumor marker (−).
There is a slight curvature in the lower thoracic spine. No abnormalities in blood or biochemistry.
Head CT shows calcification and low absorption in the cerebellar hemisphere. Enhancement effect (−), cerebellar symptoms (−) with contrast agent. The patient is diagnosed with cerebellar atrophy or arachnoid cyst and is followed up without surgery.
Recently, nystagmus appeared, and a tumor was pointed out in the cerebellar hemisphere on the CT of the head. Glioblastoma multiforme on pathology.

<< Case 25 >> Derived from the father. Woman. 16 years old.
Two siblings and one younger sibling have no café au lait spots or soft masses. Immediately after birth, a large café au lait spot and a soft mass in the same area were observed from the back to the buttocks. Iris nodule (+). Surgery for a soft mass in plastic surgery at S General Hospital.
Recently, she came to the hospital because her binocular vision dropped from 2.0 to 0.9. CT on head, occipital lobe tumor. Recently, it drops further
to binocular 0.1. The patient was referred to a university hospital and surgery was performed. Pathologically malignant astrocytoma.

<< Case 26 >> Derived from father. Woman. 13 years old.
An epileptic seizure exists at his younger brother. My sister had febrile convulsions until she was about 7 years old. My brother has allergic purpura (no abnormalities at the moment).
There are café au lait spots almost all over the body. Number and area are increasing. Recently, soft masses have also begun to appear. Iris nodule (+).
I have had stomachache since March this year. June: Bloody stool twice. Open surgery was performed. It was a colorectal tumor with a high degree of malignancy in pathology.
No special note on head CT.

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[The following is unknown. In other words, the case itself is a male case of the proband]

<< Case 27 >> Unknown origin. male. 57 years old.
Café au lait spots and soft masses are prominent. At age 30, she underwent lumbar soft massectomy.
Surgery has been performed 12 years ago, 11 years ago and 8 years ago under the diagnosis of hydronephrosis in both kidneys since 12 years ago. Pathological benign hamartoma.

Severe left visual impairment has been occurring for 10 years, but has not progressed.

No abnormalities were found by chromosome test.

In August last year, nystagmus appeared. A similar nystagmus appeared in September. (However, nystagmus occurred only once in August and September.) MRI was performed, and astrocytoma suspected to be partially imaged on the right parietal parietal region was pointed out. A suspected astrocytoma in the right temporal parietal region was removed by craniotomy, but the portion that was thought to be a tumor that had been imaged by MRI was a benign tumor without vascular hyperplasia and glioma neoplasia.

<< Case 28 >> Unknown origin. male. 39 years old.
Café au lait spots on left buttocks since birth. A soft mass appeared 4 or 5 years ago. Two years ago, on the left edge of the left third intercostal sternum, 8 mm in diameter, a hard, clear, mobile induration

<< Case 29 >> Unknown origin. male. 21 years old.
My sister is SLE. When I was in elementary school, I noticed a brown spot on the upper right lip. It was a cafe au lait spot.
When you are a junior high school student, notice light brown spots on the abdomen and both upper limbs. In July 1984, a CT scan revealed a brain tumor, and the tumor was removed. On pathology, the tumor was benign.

<< Case 30 >> Unknown origin. male. 19 years old.
She says she has had chickenpox a couple of times. Urinary retention and rash appeared with contrast agent. Right lower leg false joint. There are several café au lait spots on the trunk.

<< Case 31 >> Unknown origin. male. 17 years old.
About 7 or 8 years old, café au lait spots have frequently occurred mainly on the trunk. There is only one rice-sized soft mass on the back. In addition, since about 8 years of age, the bones of both lower legs have been enlarged.
From November 1990, the swelling of the lower left leg becomes prominent.

<< Case 32 >> Unknown origin. male. 17 years old.
At the age of 9, bilateral cervical lymphadenopathy appeared. At 12 years of age, resection of the soft mass in the back was performed.
At the age of 17, a soft back mass appeared again. Café au lait spots on the whole body.
<Case 33> Unknown origin. male. 14 years old.
At the age of 5, a left upper arm soft tumor appeared. A soft mass is also present on the right neck and right wrist. Brown spots on the anterior chest from childhood. Dermatology diagnoses café au lait spots.
At 13 years of age, a soft mass in the left upper arm was removed.
At 15 years of age, surgery was performed for extramedullary tumors of the third and fifth cervical vertebrae. Pathologically, it was a benign tumor. He had a sickle meningioma (fibrous).

<Case 34> Unknown origin. male. 14 years old.
Surgery was performed at the age of 5 for congenital partial loss of the left fibula. The same operation was performed at the age of eight. Under scrutiny for liver function decline for 2 years from age 8 years. There is secondary glaucoma.

<Case 35> Unknown origin. male. 4 years old.
Gait disturbance, left neck bulge, spinal curvature, swallowing difficulties.

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[The following is unknown. That is, the case itself is a proband female case]

<Case 36> Unknown origin. Woman. 51 years old.
Soft masses and café au lait spots throughout the body.
<Case 37> Unknown origin. Woman. 35 years old.
Soft mass and café au lait spots (appearing at age 35) throughout the body.
No abnormalities in chromosome tests.

<Case 38> Unknown origin. Woman. 22 years old.
Café au lait spots that occur frequently throughout the body. Recently, soft tumors protruding in a hemispherical shape of adzuki bean tend to occur more frequently.

<Case 39> Unknown origin. Woman. 4 years old.
About a year ago, café au lait spots began to appear on both palms, and the number has increased. Soft mass (-).

<Case 40> Unknown origin. Woman. 3 years old.
Irregular café au lait spots on the trunk and limbs, irregular in size smaller than the thumb head size, occur frequently. Soft mass (-).

**Discussion**

There are few documents that clearly specify the origin of neurofibroma type 1 brain tumors. There is a literature on malignant brain tumors that clearly indicate the origin of one case, but it was from a mother in a case of multiple malignant schwannomas, and the patient was a male6).
In addition, there is another case in which the origin is specified, which is a document presenting spontaneous resolution of orbital glioblastoma multiforme in a 2-year-old girl from a father5).

Considering 40 cases, maternally-derived male patients with neurofibroma type 1 have a strong tendency to become malignant. In addition, female patients derived from fathers have a similar tendency to malignancy.

(4) The maternal effect in neurofibroma type 1, that is, the maternal effect13) has been said so far. However, there have been many objections, and the opinions have not been unified. I propose a new cross effect here.

(4) Maternal effects do exist in this survey. It is highly related to whether neurofibromatosis type 1 is a female patient derived from a father or a male patient derived from a mother, or otherwise. Thus, malignant tumors are extremely likely to occur in maternal male patients and paternal female patients in neurofibromatosis type 1, and female patients of maternal origin, male patients of paternal origin, and patients themselves with the proband In the case of, the absence of a malignant tumor would provide one indication for the mechanism of cancer development.

**Literature**


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