Immunotherapy with dendritic cells (DCT)

Fighting cancer with the immune system, a century-old dream of medicine, which has come a considerable step closer since the discovery of immunotherapy using dendritic cells at the end of the 1990s.

For this, the "father of modern immunotherapy" Professor Ralph Steinmann was honored with the Nobel Prize for Medicine - the highest distinction for a scientist - in 2011.

In countless research and therapy facilities around the world, people are increasingly turning to dendritic cell therapy, more than 7,000 scientific papers have been published on the subject and in some modern countries, such as the USA, this therapy has already been approved.

The effectiveness of dendritic cell therapy

Who can benefit from dendritic cell treatment?

Dendritic cells are processed in a highly specialized laboratory

The effectiveness of dendritic cell therapy has been proven for all types of cancer except for blood cancer. It has been shown to be particularly effective for skin, kidney, breast, colon, pancreas, and prostate cancer. Patients with ovarian cancer have also been shown to benefit from treatment with dendritic cells.

However, since there are standard therapies for most types of cancer, some of which have been developed over decades, it is advisable to use these therapies and to carry out immunotherapy to support them. Today we know that tumour cells that have already been damaged by chemotherapy or radiation can be destroyed much better by immune cells than undamaged tumour cells.

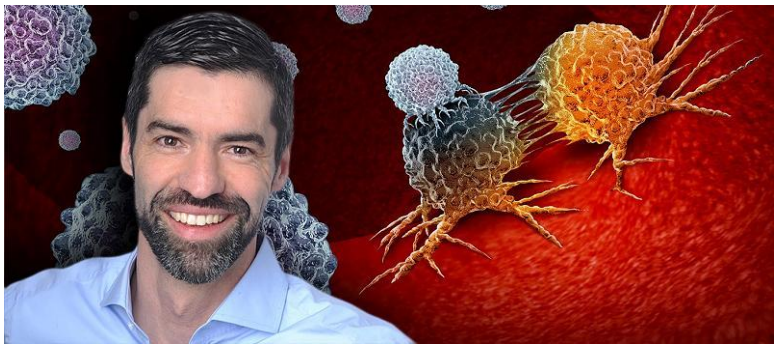
Treatment with dendritic cells is often also used when conventional therapies have not been successful.

This has been shown in renal cell carcinoma and malignant melanoma. However, vaccination with dendritic cells is most promising when only small amounts of tumour cells are present. It is now known that the immune system often functions much better in patients with a low tumour mass than in patients with a high tumour load.

As with chemo- and radiotherapy, the earlier the therapy with dendritic cells is started, the more successful it is

Cancer and the immune system

Can the immune system protect against cancer?



Our immune system is protecting us every day

The immune system is our body's own defense system against damaging pathogens such as bacteria, fungi and viruses, but also against cells that are degenerate and divide uncontrollably. Every day in our lives, about eight malignant cell proliferations occur in the body.

Nevertheless, only 1 cancer develops on average over 200 years of life. This shows that the human immune system recognizes and destroys almost all cells that show changes that could develop into cancer.

This question has been investigated by scientists.

In 3625 healthy people who were over 40 years old, they examined the function of the immune system over a long period of 11 years. People with a normal or even above-average functioning immune system had an approximately 40% lower risk of developing cancer.

A well-functioning immune system is therefore important to protect against cancer.

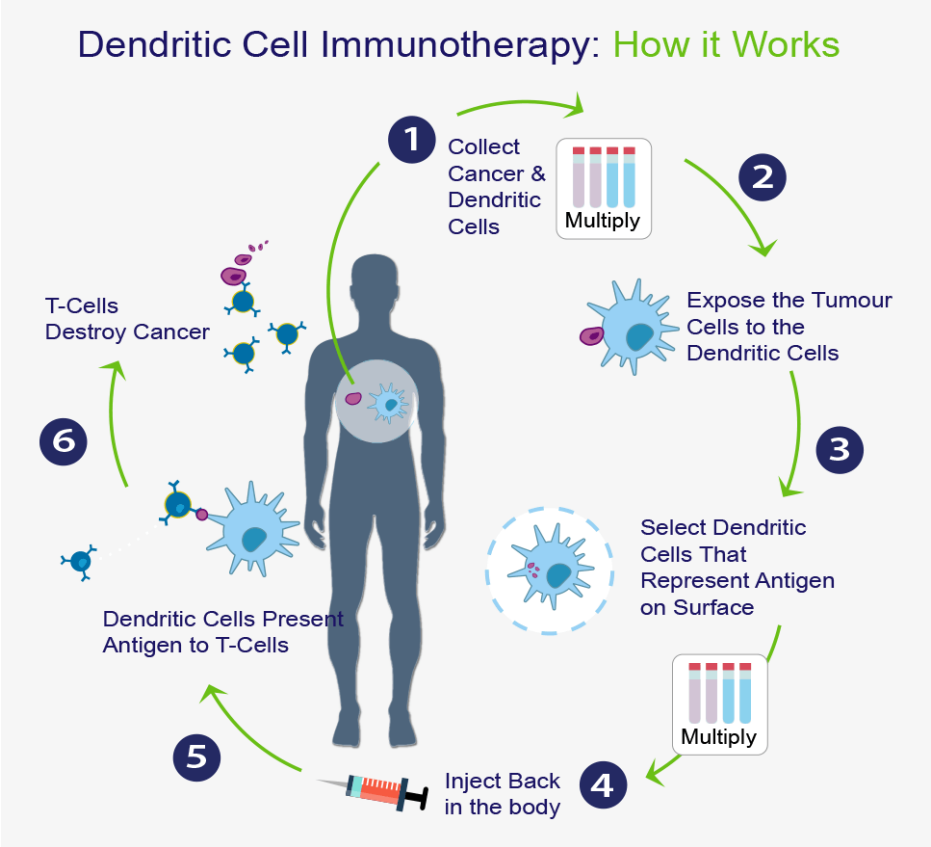
Nevertheless, it can happen that our immune system does not recognize these cells precisely because of their changes. In addition, tumours above a certain size can produce messenger substances that lead to a weakening of the immune system. Therefore, the immune system is weakened in most patients with cancer.

Because of this and based on this knowledge, doctors are trying to strengthen the immune system of cancer patients by means of drugs, vitamins and supplements, but also by using complementary medical treatments.

Through intensive research, knowledge of the immune system, the individual factors and cell types that play a decisive role in the defense against harmful pathogens or cells have grown considerably in recent years.

Today we understand much more about the cells of the immune system than 10 years ago. Among other things, it is now known that dendritic cells play a very special role in the fight against cancer.

The principle of therapy



Using a special procedure, precursor cells can be isolated from the blood, which have the potential to become dendritic cells. This ability is enhanced by means of certain messenger substances to which the cells are exposed in the test tube.

■■ While the precursor cells are in the maturing phase, they can take up proteins (e.g. tumour antigens from the patient's own plasma) into their interior.

■■ Progenitor cells that are not yet fully mature can also take up these proteins outside the body under highly purified laboratory conditions.

■■ Once the cells have taken up tumour antigens, they convert them and present them on their surface. Thus, the characteristic features of these antigens are later more easily recognizable for other immune cells. During this process, the precursor cells mature into fully developed dendritic cells, which carry the characteristic features of harmful structures of tumour cells in connection with a special signaling sign on their surface. The immune cells can recognize this signal and identify it as harmful

■■ If the now fully developed dendritic cells are now injected under the skin, they migrate from there into the lymph nodes and activate different types of extender cells (so-called cytotoxic T-lymphocytes), which are capable of killing degenerate cells.

■■ The activated extender cells "remember" the foreign structural features. They enter the blood vessel system, spread throughout the entire body and search the various tissues for cells that carry precisely these characteristics.

■■ If the extensor cells encounter corresponding cells (in this case tumour cells) during their search, they destroy them and send out messenger substances that alert other defense cells.

Always a dream of mankind

Dendritic cells can also be cultivated outside the body

To fight cancer with the help of one's own immune system is an old dream of mankind. This dream was brought a little closer in the 1990s by the possibility of breeding dendritic cells.

Dendritic cells are cells that patrol the body tissue and detect foreign structures. These structures are taken up by the cells and broken down into smaller components that are displayed on the cell surface.

With this "display" dendritic cells then migrate from the tissue into the lymph nodes. There, the foreign structures are offered to special executor cells (cytotoxic T lymphocytes), which then become active and set off to destroy cells with precisely these structural features.

In addition, the dendritic cells can also activate other cells, so-called T-helper cells, which then also reach the site via the bloodstream and produce substances that have a supporting effect on the cytotoxic T-cells.

Through the interaction of the dendritic cells with the T-helper cells, antibody-producing cells, such as B-cells, are also stimulated to grow and produce corresponding antibodies.

How are dendritic cells produced?

To isolate dendritic precursor cells, 200 ml of blood is taken from the patient, transported under stable temperature conditions and immediately stored and processed in a clean room laboratory, certified according to EU-GMP guidelines. After centrifugation, the blood is separated into different fractions to separate the white blood cells from the red blood cells and the non-specific defense cells, the granulocytes.

The fraction with the red blood cells and the granulocytes is discarded.

The lymphocyte fraction contains the cells from which dendritic cells will later develop. After several purification steps, the isolated cells are placed in nutrient solution. These cells, including the precursor cells of dendritic cells, settle down. Optimal maturation in the cell incubator is promoted by a nutrient solution and special growth factors. Autologous (endogenous) tumour antigens from the patient's own plasma are added to the precursor cells at the beginning of the maturation process.

The dendritic cells are cultured for 7 days in the incubator and monitored microscopically. These cells, which are very conspicuous in their shape, differ from other cells by their thin, hair-like extensions.

Before the cells are harvested on day 7, the surface characteristics, the number of cells and their vitality are specified in the flow cytometer. Afterwards, the cells are harvested, cleaned several times and placed in two small syringes.

Immunization with dendritic cells is performed subcutaneously by the treating physician in the patient's groin region, after which the patient receives high-dose vitamin C infusions and can then leave the clinic.

The therapy with dendritic cells is a gentle therapy

Vaccination with dendritic cells is rather a complementary therapy besides the standard therapies to date.

In contrast to other forms of therapy, such as chemotherapy or radiation in which foreign substances or harmful radiation are used to fight the tumour, treatment with dendritic cells uses the body's own immune system to fight the cancer.

In comparison to other forms of therapy, side effects after vaccination with dendritic cells are very rare. If at all, they are very small, subside quickly after a short period of time and have little or no effect on the patient. Therefore, a hospital stay is not necessary for the treatment, but the therapy can be performed on an outpatient basis.

For these reasons, vaccination with dendritic cells can also be carried out in addition to other therapies. However, care should be taken to ensure that the various treatments are coordinated in time. Although the number of studies on the therapeutic benefit of dendritic cells in tumour treatment is constantly growing, standard therapies should not be abandoned under any circumstances. These forms of therapy have already largely proven their effectiveness in extensive studies and represent the basic therapy for a whole range of diseases.

What side effects can occur

Although the therapy is carried out with the body's own cells, side effects occur. These side effects can occur because the body's immune response, like an infection, releases inflammatory messengers that cause mild fever and tiredness. A reaction to the vaccination can also be noticeable through swelling lymph nodes. Occasionally, redness may occur at the injection site. However, all these symptoms are harmless.

FAQ´s

1. how do I know whether the DCT is suitable for me?

All cancers that form a solid tumour or carcinoma can be fought with dendritic cells, even if metastases have already formed.

2. who is not suitable for the Therapy?

Some types of leukemia don't respond to dendritic cells.

A blood sample should be taken not less than 7 days after a blood transfusion.

3. Will my family doctor recommend this therapy?

Most specialists are aware of this therapy, although it is not yet widely used in treatment protocols. As with all new treatments, it takes time to convince most of the medical profession. The advantage of this therapy is that no damage is done to the body and there is a higher success rate.

4. I really do not want chemotherapy

Dendritic cell therapy as a non-invasive and pollutant-free treatment gives the chance to avoid chemotherapy. But every patient is different, and your Doctor will know if and when chemotherapy will be needed. Often a low-dose chemo can be used instead of a full one.

5. what is the right time to receive a DCT?

The DCT cannot be used as a cancer prevention tool, even though the term "vaccine" might suggest it. Dendritic cells must be loaded with information from cancerous material (antigens). This is only present in an affected body. The earlier the therapy is given, the easier it is for the immune system to fight the cancer. Nevertheless, amazing results have been documented even in the final stages.

In palliative treatment, the DCT can relieve pain and improve quality of life, even if full recovery is no longer expected.

6 How can I verify the expected success rates?

You can find more information at: www.iaso-cancer.com

Contact Mr. Bruno Rosset. He will discuss everything else with you. He has access to a database of studies on many cancers. The best thing is to talk to him, please call him. He will also arrange an appointment for you at the best located clinic that offers DCT

7. when will the first results be seen?

Patients report a better feeling of well-being a few days after the vaccination, recognizable results of the effect on the tumor are expected about 3 months.

8. what are the costs - and who covers them?

Depending on the chosen program, the costs are about 16.500 Euro.

In some countries, private insurances cover the costs partially or completely. Otherwise, the costs can also be financed through some banks if necessary. Foundations also grant subsidies.

9 How can I further contribute in my own recovery?

The development of cancer is determined by long-term factors. Some of them are determined by genetic factors, possibly by environmental ones - or just bad luck. Others are based on our own circumstances, our lifestyle or habits. The clinics Bruno Rosset works with promote a self-confident, holistic approach to personal health and show the way back to health - not only the way away from the disease.

10. Where can I get the therapy?

The treatment takes place in a private clinic in Germany under specialist medical supervision, -

11. If I have any further questions, who can I ask

Contact Mr. Bruno Rosset. He will discuss everything else with you and make an appointment in the clinic:

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Rosset Consulting: aims to be a leader in providing alternative, scientifically proven cancer therapies to improve the lives and survival of cancer patients.

Important note

The contents of this information are for general information and should under no circumstances be used without the advice of a specialist who is familiar with the medical method of dendritic cell therapy and who knows the personal medical situation and history of the patient in order to recommend the correct form of treatment.

Literature list DC therapies

Allgemein

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Melanom

Table 1: Kopiert aus Anguille S. et al.; Clinical use of dendritic cells for cancer therapy

			Evidence level	Overall survival		
Author	Year			DC group (months)	Control group (months)	% change
Thurner et al.	1999	N = 11	III-3	9.3	4.0	+133%
Dillman et al.	2004/2009/2012	N = 54	III.1	64	31	+107 %
Trefzer et al.	2004	N = 17	III.3	22.4	9.0	+180 %
Vilella	2004	N = 11	III-3	7.3	4.0	+83 %
Kyte et al.	2006	N =16/22	III-2	12.3	5.8	+112 %
Nakai et al.	2006/2008	N = 20	III-3	8.6	4.0	+ 115 %
Hersey et al.	2008	N = 34	III-3	18.5	11.6	+60 %
Ellebaek et al.	2012	N = 28	III-3	9.4	5.1	+ 84 %
Oshita	2012	N = 24	III-3	13.6	7.3	+86 %
Aarntzen et al.	2013	N = 29	III-3	15.0	8.3	+81 %
Tel et al.	2013	N = 15	III-3	22.0	7.6	+189%

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