Other Standard Treatments

Laser treatments

This involves focusing a beam of high-intensity light at tumour cells. The use of laser is restricted at present to treating pre-cancerous states and small tumours. It works by vapourising tissue at very high temperatures. The result of laser treatment can be a hole or ulcer. The problem with laser treatment is that it can only be used against the portion of a tumour showing on the surface. But tumours are like icebergs. For cervical pre-cancerous conditions it is claimed to be very effective – for all other purposes it hasn't definitely been demonstrated that it is curative.

Hyperthermia

This refers to the raising of the temperature of the body to about 108° F (42° C) – and sometimes higher – by various means. The whole body may be heated or localised heating can be achieved using microwaves. There is some disagreement as to its usefulness. At present heating treatments are generally limited to one hour sessions but it appears that longer sessions have achieved some exciting results – the longer the better. This is, in fact, a therapy that has crossed the orthodox-alternative divide and is recommended by both.

Since the high heat interferes with the cell's ability to repair itself after radiation treatments it is now being used along with radiation and it appears that immediate response rates nearly double as a result. One study showed that radiation on its own had a 31-37% response rate while radiation with heat treatment had a response rate of 63-71%.

This suggests that, if radiation is to be chosen as the form of treatment, the best way of conducting it would be to have very small fractions of radiation everyday with long term hyperthermia treatment in-between.

Hormones

Hormone treatment is often recommended with breast and prostate cancers. The hormonal intervention with these two cancers however is very different.

With breast cancer

It has long been known that a majority of breast cancers respond to hormones. For this reason the removal of ovaries was a common treatment. This has been surperseded by hormonal drugs such as **tamoxifen**. This is taken orally and has few side effects. It should be taken for at least five years though doctors may suggest that two years is adequate. About half of patients with hormone responsive breast tumours will get good results.

With prostate cancer

Hormones cannot cure prostate cancer but they can slow the growth. The idea behind the treatment is that the male hormone, testosterone, helps prostate cancer cells to thrive. Removing this hormone slows the rate of growth. One way in which this can be done is through surgical castration. Another way is through oral hormone pills that feminise the patient. The side-effects of this therapy are

severe:besides breast development there is deep-vein thrombosis (blood clotting). In fact the side effects of all such drugs should be read with care. Those for hydrocortone, one of the hormone drugs used includes raised blood pressure, heart trouble, mood changes, blood clots, thinning of the bone leading to increases in fractures, bruising, changes in vision and acne. It doesn't include loss of sexual interest though this too will almost certainly happen

Sometimes the chest may be irradiated to stop the oestrogen causing breast formation – the result can be painful. The problem is that these hormones have to be taken for life.

The fact is, taking hormones for prostate cancer is a tough option – very severe side-effects have to be borne for a less than satisfactory objective.

Biological Therapies

Everyone accepts that the body has an immune system which helps to defend it against disease. This immune system is generally seen at the level of specialised blood cells called macrophages which recognise an invading foreign threat to the system – ie a bacteria or virus. They engulf these antigens and break them down to smaller proteins. Macrophages also release substances called cytokines which alert other cells, the lymphocytes, to respond. There are two types of lymphocyte, B lymphocites, which produce antibodies, and T lymphocytes which have the task of recording and memorising the antigens for the future. They also attack foreign invaders directly.There are other cells such as the white blood cells whose job is to eat up the foreign invaders and destroy them.

The idea behind biological therapies is that these defences could be activated to target cancer cells – and if they can be activated the cancer cell would be destroyed by the body's own immune system. Sometimes this happens spontaneously. In 1986 Molly O'Connor, a five month old baby, was diagnosed with neural blastoma which had already spread to the liver. The cancer tumour swelled up and distended the stomach. The specialists however detected certain signs that were positive and decided not to proceed with chemotherapy. Instead they observed her. At a certain point the cancer stopped growing and retreated of its own accord. She is still alive to this day. This was a case of spontaneous remission. Somehow the immune system kicked in and once it had done so the cancer tumour retreated and finally disappeared.

In order to replicate this process, a large number of biological substances, extracted from tumour and immune cells, have been investigated: interleukins, interferons, tumour necrosis factor, prostaglandin and others. All of these substances have been trialed on cancer patients. Some have very minor side-effects, some cause flu-like symptoms and some, such as interleukin-2, has severe and life-threatening effects

This is a relatively new form of treatment that is still highly experimental in its strategies and substances used. There is no doubt that some previously terminal patients are alive today because of this form of treatment.

Vaccination is another form of biological therapy. One pioneer in this field is Dr Donald Morton, Director of the John Wayne Cancer Institute. He has used the standard BCG vaccination with some success against malignant melanoma – four of the first seven patients to receive the BCG survived. That is to say the results were magnificent – 50% effectiveness in otherwise fatal conditions – but did not amount to a 100% effective cure for cancer. Analysis of the results showed that those patients whose melanoma was confined to the skin recovered but those whose melanoma had struck deep into the body – particularly the brain – did not.

Another leading US research centre is at John Hopkins Hospital in Baltimore. There they have found cervical cancers in mice respond well to vaccines – mainly because of its viral origins. Human trials are the next step. German investigators are working with vaccines based on a group of proteins called peptides – with some success. Two patients working with researchers in Frankfurt, both with advanced cancers, were injected with vaccines containing their own cancer cells and are now symptom free.

A vaccine against cancer? This is good news and holds great hope for the future. Vaccination has many benefits over chemotherapy – it is potentially effective and it is non-toxic. There is even the good news that cancers of the breast, lung and prostate also responded to the melanoma-specific vaccine. If mainstream medicine is likely to come up with any cancer cure, this is the most likely route. It is a product of scientific medicine of the right kind. But it is still early days. Many research hoops have to be gone through. The light of dawn has not yet arrived.

Bone marrow transplantation

There are two reasons why a patient may be advised to undergo bone marrow transplantation. One is Allogenic transplantation, in which new bone marrow – usually from a close relative without cancer – is transplanted into the patient to help the body to fight the cancer. Identical twins are fortunate in having a walking supply of perfect bone marrow to draw on. Autolopous transplantation is used when the doctors want to use massive doses of chemotherapy – dose levels that would normally kill the bone marrow cells. In this case the bone marrow is taken out before the chemotherapy course and replaced afterwards. This is perhaps the most dangerous and painful procedure known to modern medicine. The risks of death from the procedure alone are very high. It claims a success rate of 40-60 percent in the case of early stage leukemias and some lymphomas – declining to ten percent with late stage cancers. Often it is a time-buying exercise. Apart from a few cancers such as testicular cancer and possibly breast cancer, solid tumours do not generally respond well to this procedure.

Photodynamic therapy

Can cancer be killed by a death ray? In his book: *Light: Medicine of the Future,* Jacob Liberman reported that over 3,000 people with a variety of malignant tumours had been treated with a method known as photodynamic therapy and that the results had been very exciting:

> "Although they had been treated previously with surgery. chemotherapy, radiation, immunotherapy or a combination of these, their tumours responded positively to the light treatment 70% or 80% of the time, *after only one treatment.*" (italics in the original)

This therapy is based on two facts. The first is that there is a family of substances known as porphyrins which when injected into the body are selectively taken up by cancer cells – but not by most normal cells. The interesting thing about porphyrins is that they are light sensitive to a high degree. They are not toxic in the dark but are highly toxic in the light.

The second fact is that when the cancer cells have taken up the porphyrins they will fluoresce under ultra-violet light. This allows their position to be ascertained with a high degree of accuracy if they are

Using these two facts, cancer patients are injected with porphyrins and then, once the sites of the cancer cells have been located, a red light, tuned to a wavelength of 630 nanometres, is delivered, using an argon pumped laser, directly to the treatment site using a fibroptic tube no thicker than a

hair.

> "Within hours of the light treatment, the cancer cells begin to die, leaving most normal tissues unharmed. Even in tissues that are just partially cancerous, only the cancerous portion of the tissue will die. Since specific photosensitive dyes are combined with highly tuned laser light, the treatment is extremely precise. "(Liberman, 1991)

One problem with this therapy is the fact that the liver, kidneys and spleen also retain porphyrins. For this reason a gap of 24-72 hours between injecting the porphyrins and turning on the red light. This time lapse allows the normal tissues to clear out the porphyrins. The name of the porphyrin actually used is Photofrin.

The second problem is that patients undergoing this treatment suffer from increased skin sensitivity to sunlight, which may result in intense skin irritation for 4-6 weeks after.

Apart from these two problems this therapy appears to offer an extremely good means of ridding the body of the tumour. It remains to be seen whether it will be given the green light of approval by the governing medical bodies in America.