

# Radiation

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In 1995, radiation had its first centenary. On December 22nd 1895, Wilhelm Konrad Roentgen took his wife downstairs to his laboratory cellar and showed her the apparatus he was working on. He asked her to put her hand on a photographic plate. He turned the machine on. There was a brief whirr of electricity. When he developed the plate, his wife was amazed to see the bones of her fingers and hand. His invention caused an immediate wave of interest in scientific circles and soon thousands of scientists and doctors were experimenting with it. Roentgen could have made millions by patenting the machine but instead he gave his invention to the world. He also refused to allow the rays to be called Roentgen Rays – instead he called them X-rays: X because so much was unknown about them. The popular imagination was caught and the following little ditty was coined:

The town's ablaze  
with the new phase  
of X-rays ways  
For nowadays  
I hear they'll gaze  
through cloak and gown  
- and even corset stays  
These naughty naughty Roentgen rays.

When the Nobel prizes were established in 1901, Roentgen was the first man to receive the prize for physics.

The wide use of X-rays soon resulted in the first deaths from radiation burns. Still it remained widely used for a wide range of purposes. Some shoe shops even installed them as a gimmick so that parents could check if shoes fit their children. Nowadays, X-rays are largely restricted within the public domain to medical use either diagnostic or therapeutic.

## Diagnostic and therapeutic radiation

Diagnostic radiation uses very low doses - but even these low doses have been associated with a number of dangers, the two key ones being its potential for causing cancer and the possibility that it might cause genetic damage that may not reveal itself for generations. Since diagnostic radiation is used in mammograms, women who have regular check-ups for breast cancer may actually be exposing themselves to a higher risk than those who choose not to have a check-up.

Therapeutic X-rays use far higher doses. It has been argued that these high doses are too high to cause the type of cellular damage that can lead to cancer - but medical history contains at least one well-known case which contradicts this assumption. In the 40s and 50s it was common to irradiate the thyroid glands of children who were believed to have a particular thyroid condition. Many of these babies later developed cancer of the thyroid as adults. It was only when this connection was made that irradiation of children's thyroids was stopped. Subsequently it was discovered that the initial thyroid condition itself did not exist and had never existed - it had been a figment of the medical imagination. Bizarre but true!

## Radiation therapy for cancer patients: the official version

The US National Cancer Institute publishes a booklet entitled "Radiation Therapy and You". This book is provided free of charge to anyone seeking information. In this booklet we are assured that radiation is an effective means of treating cancer.

High doses of radiation can kill cells or keep them from growing and dividing ... Although some normal cells are affected by radiation, most normal cells appear to recover more fully from the effects of radiation than do cancer cells. Doctors carefully limit the intensity of the treatments and the area being treated so that the cancer will be affected more than normal tissue.

Radiation therapy is an effective way to treat many kinds of cancer in almost any part of the body. Half of all people with cancer are treated with radiation, and the number of cancer patients who have been cured is rising everyday. For many patients, radiation is the only kind of treatment needed. Thousands of people are free of cancer after having radiation treatments alone or in combination with surgery, chemotherapy or biological therapy.

On the question of risks the brochure advises us that there are a number of side-effects. But we are assured that: 'Your doctor will not advise you to have any treatment unless the benefits - control of the disease and relief from symptoms - are greater than the known risks. Although it will be many years before scientists know all the possible risks of radiation therapy, they now know it can control cancer.'

The problem here is that the doctor assumes the terminal risk of cancer is 100%. Therefore any amount of radiation risk, by this standard, would be acceptable. However, this assumption must be qualified. The simple fact is, no-one knows what the natural history of a cancer tumour is. What would the tumour do if left alone? We don't know. This is not an idle question. There are cases where women have lived with untreated breast cancers for years. They seem to have achieved some form of static balance with the tumours. It is known that cancers are extremely individual things - some spread while still very small and diagnostically invisible; others grow large and still do not spread. Some grow quickly while others grow very slowly. Some lead to speedy deaths, others suddenly disappear. We cannot automatically assume that cancer is a fatal condition.

Secondly, the booklet informs us that "*it will be many years before scientists know all the possible risks of radiation therapy.*" Medical use of radiation therapy has been in existence for coming on a century, yet the full extent of the risks are not known? This is worrying. It suggests that no-one has looked very carefully at the consequences of radiation. This does not sit well with orthodox medicine's claim to be 'scientific'.

Thirdly, we are given a blanket assurance "*they (ie doctors) now know it can control cancer.*" This sounds positive. Yet, if radiation is the cure this statements appears to claim, why is cancer still such a big problem? Presumably, the word 'sometimes' or some other expression of frequency needs to be added to modify the statement. Nevertheless, taken as a whole, the information we are given here about radiation is clearly designed to calm our fears.

What about the side effects? Side-effects, the National Cancer Institute brochure goes on to inform us, may be negligible or serious - but how serious? The *British Medical Association Complete Family Health Encyclopaedia* is also reassuring: '...normal cells suffer little or no long-term damage.(from radiation). [However]Radiotherapy may produce unpleasant side-effects, including

fatigue, nausea and vomiting (for which anti-emetic drugs may be prescribed) and loss of hair from irradiated areas. Rarely there may be reddening and blistering of the skin.'

This is as much as the average cancer patient is told about radiation and its consequences. Certainly it is very reassuring - especially as the encyclopaedia goes on to say: 'Radiotherapy cures most cancers of the larynx or skin. The cure rate for other types of cancer varies depending on how early the treatment is begun, but the cure rate can be 80 percent or higher.'

So what's the problem? Eighty percent cure rate sounds good. Certainly, if there is general agreement that radiation is effective - and the side-effects not too burdensome - then it certainly makes sense to pursue it. A cure is worth a bit of pain. Medicine is not meant to taste good. In fact the more bitter the taste, surely, the better it is. Cancer is a tough nut to crack. Surely, it needs a tough hammer to crack it.

Indeed there are some people who claim that radiation should be used more - should have a higher profile in cancer management. Some people have claimed that 60 percent of all cancers could be cured with radiation therapy. This contrasts with the 33 percent or the 40 percent or the 50 percent that various experts say actually are being cured. The cancers where radiation is supposed to be particularly successful are cancers of the cervix, testicles, prostate, lymphosarcoma and Hodgkin's disease ( a cancer of the lymphatic system).

### **Radiation therapy: another view**

But radiation is not without its detractors. We noted that Dr Hardin Jones had little use for radical surgery. His comments on radiation are similarly caustic: "Most of the time it makes not the slightest difference whether the machine is turned on or not." We must remember that Hardin Jones was a medical statistician. He worked with the real figures - the actual death rates - not five or ten year survival rates which, as we have seen, are not to be trusted as they are influenced by a number of factors such as improved screening methods. Another biostatistician, Dr Irwin Bross, was quoted in 1979 as saying: 'For the situations in which most radiotherapy is given, the chances of curing the patient by radiotherapy are probably about as good as the chances of curing him by laetrile... because the chances of curing any patient in advanced stages of cancer are very poor, regardless of the method employed.' (quoted by Moss, 1984)

### **Radiation therapy: a third opinion**

Hang on! On the one side, we have a claim of a very high success rate and on the other side we have a claim that its success rate is close to zero. We need a third opinion. Dr Lucien Israel is a highly regarded French oncologist. In his opinion radiation should be used in the early stages of Hodgkins disease (he quotes a five year survival of 80 percent). It is also, according to him, very effective in seminomas of the testicles, and in cancers of the cervix, prostate and nasopharynx. Yet he admits that these views are tentative and provisional: 'Apart from Hodgkin's disease and lymphosarcoma, there is much disagreement as to its effectiveness - indeed there have been no conclusive trials - and many physicians prefer surgery, despite the mutilation it entails, because it has the advantage of making a clean sweep - total sterilization by radiation often remains problematical.' (Dr Lucien Israel, 1976)

As we see, he is quite blunt in admitting that radiation is not a proven form of treatment. One would have thought that such a 'successful' method of treatment, which has been in medical use for over

eight decades would be in a position to show hard statistics to prove its value. This appears not to be the case.

The people who have seen hard figures - Hardin Jones and Irwin Bross - are not impressed. Another study in 1968 involving 3,000 women with breast cancer conducted by Dr Bernard Fisher of the University of Pittsburgh found that those who received radiation after breast cancer surgery fared no better than women who did not receive radiation. (Radiation is used in these circumstances to kill off tumour cells that may have been left in the local area after surgery. That is why, in breast cancer surgery, a lumpectomy is generally followed by a course of radiation treatment. In some countries there is so much pressure on the radiation services that doctors perform full mastectomies instead of lumpectomies - even when the breast tumour is small and a lumpectomy would be sufficient.)

Indeed radiation may not just be useless. It may be dangerous. Some studies have shown that the rate of metastasis may be greater in cases receiving radiation when compared with cases who did not. A study published in the Lancet (November 1974) showed that post-operative radiation of breasts actually increased the death rate.

### **What do the studies say?**

Studies suggest that roughly one third of patients who receive radiation have a response rate - this means the tumour decreases in size by over 50%. How long the tumours respond is not known. These figures relate to the radiation of actual tumours - not the preventative radiation that often accompanies surgery as a 'safeguard' - which, as we have seen, may actually increase the death rate. To repeat, a response does not necessarily indicate any increase in lifespan. Regrettably, figures for the success of radiation as a form of treatment for cancer are not easily obtained.

Any analysis of the benefits of radiation must distinguish between those patients whose tumour is treated by radiation and those patients who receive radiation aimed at an area in the body where there might be cancerous cells but where there is no observable tumour.

### **Specific problems with radiotherapy**

Clearly, empirical observation allows doctors to claim that some cancer tumours do respond to radiation to the extent of disappearing and not returning for a long time. On this basis they subject many cancer patients to radiation therapy, even when no tumour is evident, as a precautionary measure. Whether or not this is justified has not been properly put to the test. As the comments above indicate, some studies suggest that precautionary use of radiation is not justified. But what exactly are the problems with radiation?

#### **1 Making tumours more aggressive**

One problem is that many cancers treated by radiotherapy, with apparent success, return. Some more quickly than others, and when they do so they are unstoppably aggressive. American Senator Hubert Humphrey's bladder cancer returned three years after being irradiated. No further treatment was able to slow the progress of the disease. In my wife's case, her cervical tumour disappeared after radiation. However, within three months of stopping chemotherapy, five months after completing the radiation treatment, a tumour five inches long was suddenly found to be wrapped round one of her ureters. She was given three months to live and she in fact died two days short of three months later. By that time the cancer had spread widely in the pelvic area. This happened with a tumour that

because of its initial aggressive nature was deemed to be likely to respond well to radiation.

This effect of radiation to make a tumour more aggressive should be kept in mind by those patients for whom radiation therapy is advised not as a cure but as a palliative treatment to ease pain.

Radiation also makes the tumour impervious to new treatment. Experiments with animals have confirmed this. Mice that have been irradiated do not respond at all to substances that have a beneficial effect on the cancers of non-irradiated mice.

Most cancer patients go through variations of orthodox treatments before they think to tackle the alternative treatments. In this context, it is, perhaps, worth knowing that some of the Mexican clinics that specialise in alternative therapies are very reluctant to treat anyone who has already had radiation or chemotherapy on the grounds that it is unlikely that any further treatment will succeed but will, instead, negatively affect their own statistics.

## **2 Non-response to radiation**

The fact is not all cancers do respond well to radiation. Many cancers are resistant to radiation: lung cancer particularly does not respond well. Also, any cancer that has already metastasized cannot be successfully treated with radiation - because radiation focuses a beam of ionizing radiation at a single spot or area in the body. It is most successful when used to slow down or reduce the size of aggressive tumours - and then its success may be, as we have seen, very short term.

One of the reasons why radiation is more effective with some tumours than others, and with some cancers than others, has to do with the level of oxygen in the tumour. Oxygen is vital for the success of radiation. Unfortunately, low oxygenation levels are typical of cancer tumours.

Then again cells can resist the effects of radiation. In all cells, both normal cells and tumour cells, there are enzymes that recognise in the DNA chain the parts that have undergone chemical damage. Some of these enzymes cut out the damaged portions, while other enzymes sew up the two fragments end to end, maintaining the proper order. The repair is inevitably often imperfect, and the cell will hand on these imperfections when it divides. This is how radiation damage can have effects long after the original cause. Often enough the repair is excellent and the cell behaves as if nothing had happened. Some tumours - of skin, tongue and lips - respond very slowly to radiation treatment but in these cases the radiation often has good long term results. In other cases a tumour may appear to melt away only to return with greater force. This is true of certain sarcomas for example.

Radio resistance, as this effect is called, is a major problem and it has led some doctors to consider giving radiation in small daily doses rather than at intervals of days or even weeks. In this way the cells are given less time to repair themselves. Early evidence suggests that anyone deciding to take radiation should have many sessions on a daily basis rather than fewer sessions at intervals. However, pressure on radiotherapy services often makes this impossible. A case of health service administration procedures impeding possible beneficial medical practice.

When designing a course of radiation, radiotherapists will calculate an overall figure - perhaps 6-8,000 rads - In Britain, rads are known as Centi-Grays 'Cgy' - and then divide this into fractions. At each session of radiotherapy, the patient will receive a fraction. Low overall doses of radiation will tend to be less damaging than high doses - - but also less effective. Radiotherapists need to balance risks against effectiveness. In America, they tend to opt for lower doses. In Britain, on the other hand, they tend to opt for higher doses. Critics say that this is because, the British legal system being

what it is, doctors do not have to worry about being sued and also because success is measured only in terms of positive outcomes (ie destruction of the cancer tumour). If a patient's cancer disappears then this is counted as a success even though the patient him/herself may be killed or incapacitated in the process.

What is most surprising though is that there are no generally agreed levels for radiation treatment or what constitutes the best regime. It is known that this variation has resulted in higher radiation injury rates in the north and southwest of England. Pragmatic concerns also interfere with ideal theoretical practice. At least one study has shown that regimes that involve daily exposure to small doses of radiation tend to have better results than larger doses with longer intervals in between. This is because the cells don't have time to repair the DNA damage in-between treatments. Given the pressure on NHS radiation services, however, this is a 'luxury' that cannot be afforded.

### 3 Radiation Injuries

One of the worst consequences of radiation is the injury it can cause. Injury, unfortunately, is not a random, rare and unforeseeable consequence of radiation treatment. It is an inevitable consequence.

We have already read the British Medical Association Complete Family Health Encyclopaedia statement that "*Provided the correct dosage of radiation is given, normal cells suffer little or no long-term damage.*" This statement appears to be based on a need to give reassurance, rather than a need to explain the truth.. The fundamental fact is that radiation damage to normal tissues is a *necessary* and *inevitable* part of radiotherapy and this is clearly understood by all radiotherapists, but by very few patients. The reasons for this is as follows:

One of the problems with radiation is that each time a tumour is irradiated 37 percent of the tumour cells are not affected at all. The next time, 37 percent of this 37 percent is not affected - and so it goes on. Unless, surrounding tissue is also attacked, it is impossible to eliminate all the malignant cells by radiation alone. From this we can see that radiotherapy can never succeed on its own if it is only aimed at the tumour. If radiation is used to affect the surrounding tissue then the likelihood of success increases dramatically. In fact, one can say that the success of radiation as a therapeutic tool rises in exact proportion to the amount of damage caused to surrounding tissues. Some damage will be discovered very quickly. Other damage may not appear for ten or twenty years - and may then not be attributed to the radiation treatment.

Radiation can cause... loss of function of the irradiated tissues. The different organs vary in their vulnerability to this sort of complication. The liver, kidneys and lungs are particularly fragile; the muscles are also susceptible." (Israel, 1976)

This damage may be very mild or it may be permanently incapacitating or even life threatening.. The fairly recent use of radiation and chemotherapy together has resulted in higher numbers of patients suffering from radiation-induced problems. Some doctors have established a grading for radiation damage:

- Grade I: Minor symptoms which require no treatment
- Grade II: Symptoms do not affect the performance status and can be managed by simple outpatient methods.
- Grade III: More severe symptoms altering the performance status. May have to be admitted for diagnostic procedures or minor surgery.

Grade IV: prolonged hospitalisation and major surgical intervention

Grade V: fatal complications

What this list tells us clearly is that some patients die from their radiation treatment and that for all patients suffering grade II, grade III and grade IV damage, pain - even extreme pain - and serious discomfort are the norm. How many patients fall into these categories? No-one is saying.

But what exactly is the risk? As we have seen this is a difficult question to answer because there is so much variation in therapeutic procedure from one hospital to another. But doctors have begun to state a figure of 5%. Five percent of patients undergoing radiation suffer some kind of serious complication. But this figure does not appear to have any basis in fact. One critic, Vicky Parker, believes that it actually represents a theoretical level of morbidity which would be professionally and ethically acceptable. Medical textbooks say that a morbidity rate of 10 percent is 'ethically unacceptable'.

One group which strongly suspects that the figure of five per cent is a gross under-estimate is RAGE - Radiotherapy Action Group Exposure, a patients' rights group which advocates on behalf of people suffering from radiation damage and which organises mutual support groups in the UK for radiation damaged patients. Their private estimate is that more than 10 percent of all people receiving radiotherapy are permanently damaged as a result. This figure will certainly be higher for women who have radiotherapy for cervical cancers because of the number of organs so close together in the pelvic area which can also be irradiated. In their case, one would suspect a very high morbidity rate.

It is also becoming clear that some people are more sensitive to radiation than others. Different studies indicate that between 10% and 40% of women may be highly sensitive to radiation - and so will react more seriously to 'normal' radiation doses. But the patient's own sensitivity to radiation is not taken into account when designing a course of radiotherapy treatment.

Just how seriously debilitating some of these side-effects and after effects are can be seen from the following examples. These are the words of one member of RAGE:

'RAGE' What a good name. It sums up how I felt when I picked up a magazine and chanced upon an article by Linda. I read it over and over again. I just couldn't believe my eyes. First of all I cried a lot and then I felt a blinding rage. They had said I was an unfortunate one-off. How dare they do these things to us in the name of medical science and then compound their mistakes by trying to cover them up?

I had my (internal radiation) in 1989. By 1992 I had lost my bladder, womb, ovaries and half my vagina. I had lost my career and my self-respect. I also almost lost my family, my mind and my sense of humour. 'At least you don't have cancer,' my urologist cheerfully informed me. No, I thought, I don't have a lot of things, like a sex life, or healthy kidneys. Is this the price for not having cancer? I wouldn't have minded so much but they insisted I didn't have cancer in the first place. Just a few suspicious cells which could turn cancerous if left untreated...

I've decided not to be suicidal any more. Been there, done that! Mind you, watch this space. This is a good day!...What do you do when you're strolling around...or sitting chatting to friends and you feel the tell-tale damp patch seeping through your clothes, and you realise the blasted 'thing' has developed a demonic mind of its own and let you down again. You

wear loads of dark patterned, baggy clothes - that's what you do, in the faint hope of disguising your dilemma until you can reach the safety of a loo..."

(Kath Ridgard. quoted in the Rage National Newsletter, Summer 1994)

A very common effect of radiation is that it damages or kills the body's glands. This is a very important consequence for patients receiving radiation in the area of the neck or head as the salivary glands can be badly affected. In 1989, Ryan Werthwein, a ten-year-old American boy was diagnosed with thalamic glioblastoma, a highly malignant brain tumour. He underwent radiation treatment which proved to be ineffective. 'The radiation burnt out most of Ryans pituitary gland, stunted his growth, and hurt his mental functioning, We were never told about radiation's possible long term effects.' (Ryan's mother, Sharon Werthwein, quoted in Walters, 1993)

Radiation of any of the hollow organs: intestine, bladder, ureter, uterus, fallopian tubes and so on will have the inevitable effect of damaging the mucous membrane which secretes the moisturising substance that protects the inside surfaces of these organs. Note that this damage becomes far more certain when radiation is combined with chemotherapy because chemotherapeutic agents are designed to attack cells that divide and multiply rapidly such as the cells of the mucous membrane. One form of damage is adhesion: where the cells lining the inside of the intestine become fibrous, tough and rigid. When this happens in the intestine, blockage occurs, requiring urgent surgery to bypass the problem. The destruction of the organ linings is usually followed by erosion making perforations inevitable. This allows the contents of one organ to leak into another. Damage to the lymph system is another consequence when the pelvic area is irradiated. This results in extremely painful lymphatic swellings - which vary in intensity and duration and which can be permanent. Blood vessels are also vulnerable and haemorrhaging can also result - even as long as ten years or more later. Damage can also occur to the ureters, the tubes linking the kidneys and the bladder, so that they become blocked. Sometimes a straw like device called a stent is forced up to maintain the flow of urine. The problem is known as stenosis. Where stenting doesn't work, and where both ureters are affected, renal failure becomes a possibility.

Radiation also can weaken tissues so that they fail at a later date. Intestines can rupture for example.

"Eighteen months after the radiotherapy, I started having violent abdominal pains followed by vomiting...Eventually...I was in absolute agony. The pain was indescribable. I began to vomit faecal matter and was rushed into hospital. On arrival the surgeon warned me that I needed life-saving surgery...when I came round the from the anaesthetic the surgeon (informed) me that...the radiotherapy had burned my intestines resulting in the perforation, causing the bowel contents to leak into the peritoneal cavity resulting in peritonitis. The reason now, looking back, that I put up with the pain and vomiting...was because apart from being advised that there would be only some slight side effects during treatment, I was given no warning about long term side-effects...Had I been forewarned it would have saved me a great deal of both physical and emotional trauma.'" ('Mandy' quoted in the RAGE National newsletter, Summer 1994)

### **Management of radiation treatment**

Mandy and Kath were victims of an iatrogenic\* episode resulting from experimental use of a new way of delivering radiation in a number of hospitals in Manchester and elsewhere using one or both

of two new machines: the curiously named Hex 2 and the Selectron.

The background to this was as follows: Women with cervical cancer are generally treated with both external and internal radiation. For many years the Manchester Radium Pack was the standard form of internal treatment. This was generally accepted to be a safe system with a morbidity rate of 1-2 percent. Women had a small pack inserted in the cervix for two to three days. Unfortunately, for that time, the patient was radioactive and this radioactivity affected all those visiting or attending to the needs of the patient, particularly the nurses. To solve this problem, they experimented with a new system called the Selectron.. This could be controlled from a distance so that a nurse attending the patient would not be exposed to radiation. It was also programmed to deliver more radiation over a shorter time. This procedure was then used on patients from 1979 to 1987 - even though problems with it had become evident as early as 1982. The exact cause of these problems was not immediately known because in some cases the adoption of the Selectron was combined with another new external radiation machine, the curiously named Hex 2. The use of these machines appears not to have been controlled in any systematic way.

Another reason for using the Selectron was economic. The shorter treatment time - reduced from 72 hours to 20 - enabled more patients to be treated with the same equipment.

Radiation machines are expensive. The budgets of radiotherapy units are huge. One radiotherapy Linacs model machine costs £500,000 - and the upgrading of radiotherapy equipment for London alone in the years 1993-1998 was expected to cost £13.6 million. Even this sum was recognised to be an under-estimate. Selectron machines, which remain very much in use, cost £120,000 each.

The problem with such high costs is that there will be continual pressures to find savings. The best way to find savings is to increase the dose delivered each time so that radiation treatments can be shortened. Lady Audrey Ironside lost the use of an arm because a 30 session radiotherapy course was shortened to 15 double-dose sessions.

The result was tragic. There is disagreement as to whether the design of the Selectron added to the problems caused by the doctors' decision to increase the dose rate. The result is that some 300 women were condemned to a life such as this:

My life is totally controlled by my condition. I'll never have sex, never marry and have kids, never work again. I'm luckier than some though - some of the women are housebound or bedridden. I can go out when I feel better, though I have to carry morphine syrup with me everywhere...The colostomy bag and my urostomy bag have burst when I've been out, so that's a constant worry and I have to use incontinence pads all the time. I can't start the day until about 2pm and I tire very quickly. There's always something: vomiting, bleeding. I'm always back in hospital before my three-monthly appointment comes round...I've been in the operating theatre over 2 dozen times. Doctors say "but at least you're still alive. But this is no life. It's a nightmare. (Vicky Parker, one of the founders of RAGE)

No official figures have emerged from this disastrous episode - funds are rarely provided to investigate possible iatrogenic episodes - but one unofficial estimate is that nearly sixty percent of the women receiving this treatment up to 1982 subsequently suffered horrific damage to internal organs. Many are believed to have died. How many? This is impossible to say because death certificates will generally state other causes of death. Any suggestion that people die as a direct result of medical treatment is contentious. The hospitals involved in this case refuse to this day to have any contact with those patients wishing to have some discussion about this episode. None of

the hospitals concerned have made any clear admission that their radiation practices are to be blamed. It took nearly another ten years to get the issues properly aired. It was not until 1996 that Channel 4 and Panorama aired programmes on the issue.

How many women have suffered serious consequences from radiotherapy? No-one can say. RAGE has some 2,000 members who have suffered damage - about 70% of these are women treated for cervical cancer. Some doctors openly dismiss these numbers and say that RAGE is exaggerating the problem but Vicky Parker retorts: "How can true stories of members be 'over the top'.

The situation doesn't appear to have substantially changed. The Selectron is being used by more and more hospitals and patients are still not being warned of the potential for damage that radiation has.

‘Unfortunately, the other day we received a letter from a woman who when asked re safety of her R/T at Christie's (in 1993) was told 'everything was OK now - the equipment was fine tuned' - she now has bowel problems ie incontinence and has written to us for help." (Vicky Parker, in a personal communication to the author, 1995)

We should not assume however that this was - or rather, is - in any way a one-off, isolated incident. On the contrary, the constant implementation of technological 'improvements' will ensure that episodes such as the one described below are repeated. Radiotherapy textbooks state very clearly that radiotherapy is an inexact science in which procedures are decided upon in an 'empirical manner' ie if it works it works and if it doesn't then tinker with it until it does work. There is very wide variance in practice between one centre and another. Prospective candidates for radiotherapy treatment should know that fewer problems are associated with smaller fractions given frequently than larger fractions given at longer intervals.

Nor are such profound disabilities confined to the results of radiotherapy to the pelvic area. Women undergoing radiation for breast cancers are also at risk. Radiation can damage the brachial plexus, a nerve tissue in a sensitive area which can be heavily irradiated in an attempt to kill a breast tumour. More than 1,000 women are known by RAGE to have suffered injuries in the brachial plexus. Some have lost the use of a hand or an arm, some suffer intractable pain, a few have even had their arms amputated. This problem affects approximately 1% of all women irradiated for breast cancers - but is only one of fifteen or more possible types of damage that can result from breast radiation.

Oedema of the lymph gland is another common result of radiation and the result is painful swollen limbs. This is an intractable problem that requires very careful management. Radiation of the neck, head or throat will almost certainly result in the destruction of all the salivary glands and eventual loss of the teeth.

### **What's the truth?**

What is the actual figure for serious complications arising from the normal use of radiotherapy? No-one knows. Why not? Because, in the words of the Secretary of State for Health to Parliament in 1995, "The Department does not keep records of people suffering from radiation damage after radiotherapy and we have no plans to set up a national register." Hospitals may or may not keep a record of complications that arise - but do not publicise these.

### **Side-effects: the full picture**

Given these horrendous potential 'side-effects' one would expect to see clearer warnings being

given to the public. But even such organisations as BACUP - a respected national UK cancer charity which provides information to patients - say little or nothing of the risks involved. None of the women involved in the trial of the Selectron remembered being informed. "It was not our practice at that time to inform patients in detail" said Dr Robert Pointon, of the Christie Hospital in Manchester where trials of the Selectron were conducted. And Lady Audrey Ironside remembers being told very little by her doctors at the Royal Marsden Hospital in London. that she would only suffer a few temporary side-effects such as nausea and exhaustion. "I was told there were no permanent side-effects whatsoever." she recalled in an interview with the BBC in October 1991 "I was never warned of the risks of this treatment and the fact that I could be left with a useless arm and in great pain for the rest of my life."

RAGE publishes its own list of radiation side-effects culled from its members:

"Menopausal side-effects / soreness / inflammation / parasthesia (pins and needles, numbness in legs and feet) / incontinence / constipation / pain / rectal bleeding / constant bladder infections / kidney dysfunction / collapse / vomiting / diarrhoea / severe headaches / memory loss / flu-like symptoms / lethargy / adhesions / contractions / depression / blackouts / falling over / feeling bloated / oedema: swelling of hands, face, legs, feet / anaemia / abscesses / backache / hair loss / tooth decay / loss of teeth / weight loss / mental impairments such as memory loss / altered sleeping patterns / lack of sleep / severe pelvic and abdominal pain / vaginal and anal pain / discharge - front and back passage / foul smelling bleeding / arthritis / osteoporosis ie pelvic bone fractures."

It is known that radiation of the breasts also has the following side effects: fibrous, shrunken breasts, rib fractures, scarring of the lung and heart, nerve damage and irreversible obliteration of the bone marrow in the field of irradiation.

### **If it's so dangerous why is it used?**

One reason why such a dangerous form of treatment as radiotherapy is allowed to be used is that doctors assume that all cancers will inevitably lead to death. Professor Karol Sikora explains the general case thus: "For some forms (of cancer), such as cervical cancer, it is the only hope of cure and without it thousands of women would have died." But what this neglects to say is that cervical cancer is, generally speaking, a very slow growing cancer. Certainly women with this particular cancer in the early stages can afford to spend some time examining alternatives to radiation - such as the alternatives suggested in the second half of this book.

Perhaps the last word should be left to John Cairns, a professor at Harvard University School of Public Health.

"The majority of cancers cannot be cured by radiation because the dose of X-rays required to kill all the cancer cells would also kill the patient." (Scientific American, November 1985)

This contrasts markedly with the views of the US National Cancer Institute quoted at the beginning of this chapter: "*For many patients, radiation is the only kind of treatment needed*".

I know who I believe.