

# University Report

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UNIVERSITY REPORT

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NARRATOR - This week a new drug for treating cancer, what it is, and  
JOHN JONES: how it functions

That man has been able to go to the moon but has so far been unable to find a cure to cancer has always been regarded as a measure of his indifference to the common problem of common humanity. Well, is this fair comment? I don't think so, simply because it is technically much simpler to get a vehicle from point A to point B than it is to find a chemical formula to rid us of a cancerous growth that eats away at the cells of our body, and kills. Certainly it is not for lack of trying that a cure hasn't been found. Every day practically, people's hopes are raised and dashed again as news of a so called 'anti-cancer' drug hits the headlines - for a time it holds out promise but rarely does it pass all the crucial tests.

All this should not be a matter of indifference to us in Africa and the developing world, for, as we become more and more developed and take on the industrial and technological skills that are the high water marks of a developed society, the paradox is that we also take on the diseases that seem to accompany this kind of development, cancer being one of them.

Makerere University has been facing the challenge for many years. A great deal of research has been done resulting in the discovery and analysis of cancers peculiar to Africa.

JOHN JONES:  
(CONT'D.)

And of course their work continues. But on the whole however, we shall have to rely on the expertise and facilities of other countries in the hope that they will one day come up with a cure.

Recently here in London at the Imperial Cancer Research Fund's Chemotherapy Department, a new cancer drug has been discovered that holds out more hope than most. The drug is called ICRF-159. The Head of the Chemotherapy Department at the Imperial Cancer Research Institute is Dr. Kurt Hellman. He talks now to Gwyneth Henderson who asked him about the drug.

DR. HELLMAN:

ICRF-159 stops the division of normal unmalignant cells and in diseases such as cancer which are largely made up of dividing cells, the drug has the effect of inhibiting, or stopping the growth of the malignant tissue. We can use this drug and we have found it to be highly effective in many varieties of animal tumours, and its effect in man is very much as we would expect from animal experiments.

GWYNETH  
HENDERSON:

How does it in fact operate? You said cell divisions.

DR. HELLMAN:

Well in bio-chemical or bio-physical terms we can't answer it, because, although we've worked on the compound and its actions for quite a time we have not yet found the way in which it acts in the cells. We know, however, that it has a completely novel mechanism of action, but its exact limits we haven't yet defined.

GWYNETH  
HENDERSON:

How was the drug discovered, Dr. Hellman?

DR. HELLMAN:

It was discovered in our animal screens, that's to say, we have a number of tumours which are transplanted from animal to animal, then we give mice, largely, we give them the drug under test, and see whether the tumour grows,

DR. HELLMAN  
(CONT'D.)

and in this case we gave them ICRF-159 and we found that tumors which we use in our primary screen, just failed to grow.

GWYNETH  
HENDERSON:

Well, you say you use mice. At what stage is your research now? Have you yet gone into clinical trials with human beings?

DR. HELLMAN:

Now, as far as the inhibition of cell division is concerned and the effect of transplanted tumours, we have reached clinical trials. In fact, we have done quite an extensive clinical trial over the last two years, and these trials are still continuing.

GWYNETH  
HENDERSON:

What are the results so far?

DR. HELLMAN:

The results so far are quite encouraging. We have had quite useful remissions in Acute Leukaemia, and also we have found regressions in solid tumours, in a variety of solid tumours.

GWYNETH  
HENDERSON:

What's the next stage with the clinical trials?

DR. HELLMAN:

The next stage as far as the clinical trials, is that we shall put to the test the latest action which we have recently described in the British Medical Journal of this drug, which is, not only does it prevent the growth of some tumours, but it also has the effect of stopping the spread of the tumours, and this is a very important clinical characteristic of cancer, and, in fact it is this characteristic which is often fatal, it is the spread of cancer not the primary growth. This effect we want to put to a clinical trial.

GWYNETH  
HENDERSON:

So the importance of it at the moment, and this is why you have suddenly become very famous in this country is because it stops the growth of secondary cancer.

DR. HELLMAN: Yes, indeed. We've noticed that it stops the spread in a number of experimental tumours, and we have good theoretical grounds for supposing that the same might be true in man, and if this is the case, we shall be a reasonable step further on in the therapy of cancer.

GWYNETH  
HENDERSON:

Going back to the trials you have done so far, when you have been working on the regressions of cancer. Have you in fact found that the drug has any side effects that you're concerned about?

DR. HELLMAN:

We've seen a certain number of side effects which have been due to the fact that normally dividing cells are also stopped from dividing, and these have consisted chiefly of effects on the bone marrow, that is to say, the normal production of white cells and red cells and platelets is not as effective as without drug treatment, and also there has been a certain degree of loss of hair, because the hair roots are also constantly turning over, and because of this one gets thinning of hair with the drug, particularly when it is used in large doses over short periods of time. I should say that we are now learning a great deal about the drug and how to give it in man, and one of the things that we have learnt, is that if it is given over longer periods of time, in smaller dosage. We can also get an extremely encouraging effect but with much less toxicity.

GWYNETH  
HENDERSON:

Dr. Hellman, I understand there are already several drugs being used in the treatment of cancer. What is so different about this new one?

DR. HELLMAN:

Yes. Well, there are a variety of cytotoxic agents in use as anti-cancer drugs at present. But none of these have been shown at any time to stop the spread of cancer. What they do is they destroy cancer cells, but they destroy them non-selectively, that is to say, they will also have the same kind of action on normal cells, and therefore, they

DR. HELLMAN: will be quite toxic. Now as far as ICRF-159 is concerned (CONT'D.) this can stop the spread of cancer in experimental animals, and this is not accompanied by any toxicity, and if it has the same action in man we might be able to stop the spread of cancer without a great deal of toxicity.

GWYNETH HENDERSON: So, by stopping the spread of cancer does this mean that the primary tumour is then going to be more ready for treatment by radio therapy, or by surgery or whatever?

DR. HELLMAN: Yes, that is the idea. It is a step to reduce the malignancy of a tumour and make it more benign if I can put it that way, so the surgeon or radio therapist can deal with it. Because it is quite possible to live with a benign growth, there is no difficulty about that, and it is also possible to deal with it medically quite easily with a primary growth. But it is very difficult and most of the time almost impossible to deal with a secondary growth.

GWYNETH HENDERSON: What is the action of the drug? Does it kill the malignant cells off? Or does it get to the primary tumour itself and stop it spreading?

DR. HELLMAN: No, it doesn't kill the cells off. It gets to the primary tumour and prevents by changing the architecture or the structure of the blood vessels it prevents the release of malignant cells into the blood stream, where they can be deseminated into other parts.

GWYNETH HENDERSON: Dr. Hellman, one understands that many of the people who die of cancer need not have done so, had they sought medical advise earlier. Is this going to make any difference to the stage at which the patients can predict a cure?

DR. HELLMAN: Well, I think you've hit on a very important subject. It is most important that patients go to their doctors as early as possible whenever they suspect anything or any

DR. HELLMAN:  
(CONT'D.)

sign which may be connected or may be the result of a tumour to go to their doctor and to allow him to be the judge of whether they should receive further specialist advice, and if they are found to have cancer, then the earlier the treatment starts the better. It would make a tremendous difference to their chances of being cured, and I think one can speak of cures in cancer, if they go their doctors early, and it would also make it possible if the drug which we are talking about has the kind of effect in man as it has in animals in preventing spread. It will also be an additional factor in making life expectancy of patients with cancer that much greater.

GWYNETH  
HENDERSON:

Does the research carried out so far indicate in fact that the drug will be equally effective on all types of cancer including, say, specifically African types like Birketts tumour?

DR. HELLMAN:

Yes. As an inhibitor of tumour growth it would probably be quite effective in many types of cancer including Birketts Lymphoma, and as an inhibitor in the spread of cancer this is an exceedingly interesting question, because we have reason to think that the mechanism by which cells are released and spread throughout the body may be much the same from one cancer to another, and in animals as well as in man, and if this is the case, then it augurs well for the inhibition of spread of cancer in man.

GWYNETH  
HENDERSON:

Dr. Hellman. What is the drug?

DR. HELLMAN:

The drug is the synthetic organic chemical consisting of two six membered heterocyclic rings linked by two methylene groups and a methyl group in the side chain. It forms part of a class of compounds known as the Bisdioxopiperazines.

GWYNETH  
HENDERSON:

Well, if ICRF-159 does turn out to be as effective on humans as on mice, what sort of difference could it have on the

GWYNETH  
HENDERSON:  
(CONT'D.)

current mortality rate from cancer deaths, in say, somewhere like the United Kingdom which stands at the moment at something like one hundred and twenty thousand a year.

DR. HELLMAN:

Well, first of all I must make it clear that if we do a clinical trial on the effect of metastases, or secondary tumours, it will take something like two to three years to be able to evaluate whether it is having such an effect, and we will not be in a position to say definitely for such a length of time that it could have, if it works, it could have quite a considerable impact on the life expectancy as I said earlier, of the cancer patient.

GWYNETH  
HENDERSON:

In terms of numbers of the people who do die of cancer, what sort of effects could it have?

DR. HELLMAN:

Well, I wouldn't like to answer that on the spur of the moment, because this is a very complicated questions, because cancer is still very much of a problem even by direct extension which it might not effect even it if effects the spread of the cancer through the blood stream, it would not necessarily effect the direct spread, and one would have to go into these figures very carefully. But I would say at a wild guess that probably something of the order of 15 - 20 per cent of patients, and thats probably putting it quite pessimistically, could benefit.

JOHN JONES:

Dr. Kurt Hellman, Head of the Chemotherapy Department at the Imperial Cancer Research Institute. He was talking to our producer Gwyneth Henderson about the Institute's new cancer drug - ICRF-159.

And that's it for this week. I'll see you again next week at the same time. So until then, from me, John Bankole Jones, it's goodbye for now.

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