Doc. 261

IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO

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AGNES VERNON. et al

CASE NO. 153600

VS.

KAISER HOSPITAL, et al

- - -

Oral deposition of HARVEY J. LERNER, M.D., held at 330 South Ninth Street, Suite 100, Philadelphia, Pennsylvania, on Wednesday, March 22, 1989, at 1:30 o'clock p.m., before Joan M. Convery, a Registered Professional Reporter and Commissioner, pursuant to notice.

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I N D E X

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(It is agreed by and between counsel that reading, signing, sealing and certification are hereby waived; all objections, except as to the form of the question, are reserved until the time of trial.)

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HARVEY J. **LERMER,** M.D., having been duly sworn, was examined and testified as follows:

BY MR. KAMPIMSKI:

Q Would you state your full name for the record?

A Harvey Lerner.

Q And spell your last name, Doctor.

A **L-E-R-N-E-R.**

Q I am going to ask you a number of questions this afternoon, Doctor. If you don't understand any of my questions, please tell me, I will be happy to rephrase any question you don't understand. When you respond to my questions, please do so verbally. She will be taking down everything we say. And she can't take down a nod of the head, okay?

A Yes.

Q Doctor, I was handed your CV. And **I** have had a chance to go through it, not in any great detail, but I glanced at it. You are board certified in surgery,

correct?

A Correct.

Q Is there a board for oncology?

A Surgical oncology?

Q Yes.

A The closest thing to having the tickets for surgical oncology is being a member of the Society of Surgical Oncology.

Q So that there is no board for surgical oncology?

A No formal certification board, correct.

Q Is there a medical oncology board?

A Yes

Q But that's not something that you would aspire to after being a surgeon or would you?

A The answer is I tried to take those boards when they anounced that they were going to establish that board. And I can't tell you the year. But we've been doing chemotherapy and chemotherapy and cooperative group trials for a while. And I said I would like to sit and take the board examination. But the ground rules to take the exam were that I had to have gone through an internal medicine residency program. So I was not permitted to take the exam.

Q In other words, they deemed you didn't have

sufficient background or qualifications?

A 1 did have the qualification, requiring I take an internal medicine residency training program.

Q Doctor, in most of your early papers, with a few notable exceptions, you wrote primarily as it relates to cancer of, cancer of the head and neck. Would that be a fair statement?

A Yes.

Q Did there come a shift in emphasis at some point in your career, or is that still a major emphasis for you?

A We don't see as much. And it's a yes and no answer. We were seeing a lot at that time when we were involved with a drug that we used with X-ray treatments. And head and neck lent itself very well to objective responses; you could see it or you didn't see it.

And since then I have been involved in more cooperative trials, the The National Surgical Adjuvant Breast and Bowel Project and the Eastern Cooperative Oncology Group. In that sense there has been a shift, a shift away from many solo things, the national cooperative group trials.

Q And these cooperative group trials, I take it, you provide them with information or, your patients that they then put into a national survey?

A In essence, but they are randomized prospective trials.

Q What does that mean?

A That means I don't pick and you don't pick the treatment. Randomized prospective means the design is now, and we are going to see what the results are as a result of this treatment. It's not a go back to the hospital records and see what happened in the past-type arrangement.

Q I see.

A And so I have been involved in a great number of adjuvant trials, surgery or surgery plus something.

Q The last one I see here is 1988.

A Those are the published ones, yes. And there are some others that have been accepted for publication. They are not on the CV.

Q They have not yet been published, but rather they have been accepted for publication?

A Yes, or submitted.

Q What are those, Doctor?

A Right offhand, I couldn't a hundred percent say. There is one breast lumpectomy trial paper that will be coming out shortly in the Mew England Journal of Medicine and one adjuvant colon cancer paper. And I can't tell you

for sure where that's coming out. That has been accepted for publication, And that's an ECOG publication. And it's a followup of a previous publication. And there are several carcoma papers that either have been submitted or are almost completely completed.

Q ECOG stands for what?

A Eastern Cooperative Oncology Group.

Q And it's a follow up of what paper, this one that you say has been submitted?

a If we give the young lady with the typing machine a break, I will look through this with you,

Q Okay.

(Pause.)

BY MR. KAMPINSKI:

Q Would it be 128?

A It would be a followup of that.

Q And were there any other conclusions in this newer one that were different than what was set forth in 128?

A Essentially, no, Either one of those treatments that were used as adjuvant, in addition to the surgery, did not improve overall survival.

Q When you say adjuvant, you're referring to what, Doctor?

a In this instance, adjuvant means something given in

addition to the surgery, And it was chemotherapy. One drug regimen versus a different drug regimen.

Q And do you as a surgeon get involved in adjuvant therapy?

A Yes.

Q To what extent?

A We take care of our patients from diagnosis to death.

Q Do you get assistance from anyone in the medical field, as opposed to surgical field?

A If there is a specific medical problem.

Q Well, I didn't mean that.. I meant in terms of providing them with chemotherapy or radiation?

A Radiation therapy we always get with the radiation therapist.

Q Okay.

A For the tumors that we care for, we have done our own chemotherapy from day one, which is the reason why I tried to sit for the boards, I am head of the section at the Pennsylvania Hospital. of surgical oncology and cancer chemotherapy.

Q Do you in either of those capacities, and you said from diagnosis to death, my question is do you get involved in diagnosis?

A If a patient is sent to us for a diagnostic problem, yes, Example, there is a chest X-ray with a questionable lung lesion. So we will be involved. Or a woman is sent to us with a questionable breast problem, we examine her. And if a specific biopsy is required, we do that.

Q I take it the majority, if not all your business, is referral from other specialists.

A Qr general practitioners.

Q Right. And they would send someone to you if they felt that there was a problem that you could assist then: with, right?

A Correct.

Q As a surgeon?

a Correct. Not a hundred percent correct, because a large percent of our chemotherapy practice is referred to us by other surgeons.

Q All right, because you specialize more in dealing with cancer?

A The chemotherapy and the cancer, correct. After the surgeon may have performed a cancer operation for a specific cancer, we frequently will see some of their patients.

Q You mentioned that you could diagnose something as

a result of a chest X-ray or a breast cancer. What about colon cancer, would you get involved in the diagnosis of that?

A We would get involved in the diagnosis. Sometimes we see a patient after the diagnosis has been established by a gastroenterologist who may have scoped the patient and biopsied it.

Q That would be the typical way in which a colon cancer patient would come to you; isn't that true?

A No. Probably the most are referred to us by general practitioners.

Q You say gastroenterologist. I guess what I meant was most would be referred you to after some diagnosis had already been made,

A After some problem, correct. Most are referred to us either because the barium enema shows a lesion or because a gastroenterologist may have seen or biopsied a lesion. That's probably the majority of times we see a patient.

Q In your report, Doctor, you don't discuss whether or not you have an opinion or have been asked to express an opinion as to the actions of Kaiser personnel, whether they be doctors or nurses in adhering or failing to adhere to the appropriate standard of care. And my question is

have you been asked to express an opinion on that?
A No, I have not.
Q Do you have an opinion on it?
A No. I am not involved in the standard of care.
Q You received the records.
A Yes.
Q But you're telling me you don't have an opinion as to whether they did anything right or wrong?
A I'm not involved with right or wrong. Standard of care to me is by a peer. And I would answer to standard of care for a peer, a peer meaning a surgeon or surgical oncologist. And if asked about that, 1 would answer, but not a family doctor or a nurse or a gynecologist or a radiologist. I don't consider that peers. And I don't think it fair that I talk about their standard of care.
Q Okay.
A In addition, and this is more legal than otherwise, I guess, I am not in the same community.
Q Well --
A When we did the lumpectomy protocol for breasts, which was, you know, a very select group of women who did not lose their breast, and we were doing lumpectomies, I think I might have had a very tough time doing that in a very small community hospital, because that certainly was

not the standard of care when we were doing this investigational operation called lumpectomy. So --

Q When you say not in the same community, you're not talking about Philadelphia versus Cleveland. You're talking about the same community of surgeons versus family practitioners?

A Basically, or what goes on in that community. If I were in a small community outside Philadelphia, I probably would not have been permitted even by the hospital to do an investigational operation such as a lumpectomy when the standard of care was a mastectomy.

Q I don't mean to belabor this point because I understood your response. But you're not suggesting that there would be a different standard of care for the investigation of rectal bleeding by a surgeon versus a general practitioner, are you?

A I'm implying that there might be for a family practitioner versus a surgeon, because when somebody is referred to me, I am only thinking one thing. And I don't see somebody who has a common cold or all the things that lead up to that point.

So if you come to our practice, you got a very skewed thinking doctor who is thinking cancer. And I'm not thinking you have a benign thing to start with;

I'm thinking you may have cancer.
Q Okay. But it's not just --
A I don't think the treatment of cancer in Philadelphia is different than the treatment of cancer in Cleveland, if that's the difference between us. No, I think the treatment is the same.
Q I assume, Doctor, that you get somewhat frustrated in having to operate on people oftentimes knowing that there is nothing that can ultimately be done for them; would that be a fair statement?
A 1 am not happy when I have to open and close, correct.
Q And you have written, have you not, that early diagnosis can, in fact, make a difference when it comes to ultimate survival of an individual.
A I don't know that I have written the word early diagnosis makes a difference in survival. I don't know that I have written that.
Q Well, would you agree with that?
A It gets down to when I am asked about early diagnosis, what the definition of early is. And I don't mean to be difficult,
Q It's okay.
a But a week from Saturday, I have been assigned a

topic to speak in Washington to a cancer group, And it's the early treatment of breast cancer. Well, that's a particularly difficult word for me. And it bends my nose out of shape when they assign me the word early. So half my talk is going to be asking the audience, going back and forth, what they mean by early, because it means different things to different people. And what's small is not necessarily early, or what may be biologically early for me, may be biologically late for you, size-wise cr time-wise,

Q Meaning what, that it's an individual call?

A One centimeter cancer for me might be cured. A one centimeter of cancer for you might not be cured. So it's not necessarily a size phenomenon. It's a biologic phenomenon that decides most of this.

Q Would earlier be a more appropriate way to refer to it, as opposed to early?

A I like operating on people in an effort to operate for cure.

Q All right,

A If we are talking about that, I know that the majority of cancers, depending on what tumor system you're operating on, we don't cure.

Q Is that true in colon cancer?

A It's not necessarily true in colon cancer. Colon cancer, depending, has a better prognosis, for example, than lung cancer, size for size.

Q Sure. So would it then be fair to say in talking about colon cancer, that the earlier the diagnosis, at least potentially the better prospects for cure?

A As a general statement, but not necessarily an absolute statement. There are some things I am sure you're familiar with, lead time bias.

Q No, I am not. What's that?

A If two people, example, and I have some slides wnen I give my talks about: different subjects, and I will use it in Washington, called lead time bias. This is an example. And it helps me to be a lawyer because I can say this is a given. If the given is two people get a cancer on the same day, say age forty, and both people die on the same day, say age fifty, that's the given.

One person may be compulsive and who may get lung cancer, for this example, and get a chest X-ray every four months or very often. And they find this small lung cancer, And they take it out. And they may give new sophisticated treatment, X, Y, Z, and he appears to survive a long period of time, let's say five years.

Q Okay.

A And then dies, has a recurrence and dies, has what's referred to as a long free interval. We don't know about any cancer until there is a measureable recurrence. And the other person is negligent with their health care, for whatever reason. We will find a very large cancer, eight centimeters in size, We operate, take it out, has a prompt recurrence and dies. It appears that if the other person only came in earlier, look what we could have done, because this person survived five years, two and a half times longer than this person who survived two years.

Knowing about a cancer sooner doesn't necessarily mean you're going to survive longer, because once the cancer cell is growing somewhere that is not within the confines of a surgical cure, then you're not going to be cured.

Q You mean once it's metastasized?

A It depends on the type of metastasis. You can have a local regional metastasis, maybe you're biologically fortunate. I am sure you have been involved a lot with breast cancer. And the more nodes involved, the less well you're going to do, but not everybody dies, nor does everybody live who has small cancers and negative nodes.

Q Just let me regress for one moment.

A You didn't mean you yourself regress,

Q Perhaps. I assume, Doctor, you're also not going to render an opinion regarding the conduct of Mrs. Vernon; would that be accurate?

A I don't know what you mean by her conduct. I didn't know she had any misconduct.

Q Well, I don't think she did, but certainly those allegations may be made by the defendants in this case. And I am just seeking to determine whether or not --

A I am not involved in her either.

Q I notice that they didn't send you her depositon or testimony. You don't know what she had to say, what she did or didn't do?

A Mot important in my thought process. And I have no hostility nor liking or any other feelings about her, except that she is young. And it's sad when a young, vital, healthy person gets an adult malignancy and doesn't do well.

Q In your report, Doctor, do you have a copy of it there?

A Yes.

Q In really the second to the last paragraph, which is where you discuss your opinion,

A On page two?

Q Yes.

A I am sorry, "Waving reviewed," okay.
Q You state that, "I assume there is an alleged delay in diagnosis of approximately twelve months," Were you asked to assume that?
A No.
Q Why did you make that assumption?
A Because it seems to me somewhere I said that in April of '87 she had a history of rectal bleeding, And it was about a year later that she had a cancer detected,
Q Doctor, would it matter if it was discovered in January of '86, €or purposes of your opinion?
A In January of '86?
Q Yes, sir,
A No.
Q Why not?
A Because having understood cellular kinetics with tumor growth and doubling, no.
Q With what, double, I am sorry?
a Cellular kinetics with tumor cells and doublings, the answer is no.
Q Is it your opinion that doubling of tumor cells is constant?
A No.
Q You refer to your slides that you use in discussing

lead time bias. Are those the slides referred to in this paragraph?

A I didn't write lead time bias.

Q I know that, but you referred to wanting to discuss slides. I am asking if those are the same slides.

a What one of the slides would be an example, as I gave. Yes, I have a slide like that. But I am invited frequently to speak on breast and lung and sometimes colon, And so I have carrousels with those lectures on there.

Q Did you make copies of those slides for me, Doctor?

A No.

Mai. ROBERTSON: He is not going to use any slides during his testimony,

TWE WITNESS: Can we go off the record?

MR. KAMPINSKI: If we are going to discuss this, I prefer we stay on,

THE WITNESS: I don't make copies of my slides for anybody. And I would be happy to let you hand copy them.

BY MR. KAMPINSKI:

Q I don't know that I would be competent to do that, Doctor.

A Or photograph them off a wall. But I have loaned

slides on similar occasions, only to go to a meeting and see some of my own slides on a wall, And so after that, I stopped allowing that.

Q That's fine.

A I won't even let anybody borrow my slides to give a talk because the slides sometimes come back in a different order in the carrousel. When you are accustomed to giving a talk in a certain order, and it's in a different order, it drives me crazy.

Q Do you intend to draw or depict anything that is set forth in your slides?

A I hope so, if I am asked questions.

Q And these would be, I take it, the same thing that is set forth on your slides?

A Some things. My slide talk is usually well over an hour of carrousel slides.

Q What do you intend to depict, Doctor, in terms of reflecting that it wouldn't have mattered if Mrs. Vernon's cancer was diagnosed sooner?

A Basically how cancers grow,

Q Could you do that for me?

A I have to be asked a specific question, rather than ad-lib it,

Q Well, I am asking, Doctor, what it is you intend to

draw. In other words, you understand I am placed at a serious disadvantage.

A I would be happy to let you look at all my slides before you leave.

Q That doesn't do me any good, Doctor, because I am not a physician, as you are.

A I am not your adversary either.

Q Okay.

A But I plan to get up and talk about tumor growth, how they double, how they spread, when they get into circulation.

Q Now do they double and grow and spread and get into the circulation, Doctor?

A Tumors, to go from say one cell, double and become two cells or go from one million cells and become two million cells, the length of time it takes to double the volume of cells is considered the doubling time.

Q Okay.

A There is a range of doubling. There is an average doubling time for colon cancers.

Q Go ahead. I am listening.

A It takes, as an example, thirty doublings to be one centimeter in size. And it takes a specific length of time to go through thirty doublings. And understanding

that, the cellular kinetics and using doubling time, which I think is the best available method to estimate the duration of a cancer, you can calculate back.

Q Well, I thought you indicated to me a few moments ago that it's not a linear --

A You asked if they always double at the same rate,

Q Okay.

A And I said no. And I believe that.

Q Okay.

A I believe that tumor growth is probably constantly decelerating. And there are lots of different equations. I am not superskilled in some of those mathematic equations, but there is Gompertzian tumor growth, which has --

Q Why don't you spell that for the court reporter?

A G-O-M-P-E-R-T-Z-I-A-N.

Q Would you explain that for me?

A It's a curve that starts out relatively fast, then goes on a straight line like linear or exponential, and then gets very slow again. Much of the clinical course of a cancer is very similar to exponential, although it's, in my opinion, decelerating, always slowing down. And I believe that even though a cancer appears to be exploding at the end of the natural history for some patients, just

growing so rapidly, it's probably growing its slowest at that point,

Q Do you agree with the Gompertzian theory?

A Do I agree?

Q Yes.

A I currently believe that tumor growth is constantly decelerating.

Q So you don't agree?

A I don't agree that it's a hundred percent Gompertzian. I am going to the cell kinetics meeting next week. And I might get educated a little differently. But right now I really believe, as do most people, that tumor growth is decelerating.

Q Don't most people agree with the Gompertzian tumor growth theory?

A Most people probably think it's Gompertzian right now, but the people who are out on the leading edge, the people in the Cell Kinetics Society who are doing a lot of this bench work, probably believe that it's decelerating.

Q If it were Gompertzian, is there any way that you can determine when it rapidly increases, in terms of fixing a point in time?

A No, that's why I refer to average, or if we can measure two points in time, we can say what the average is

for those two points in time. But on any given day, I think it's growing at a decelerating rate.

Q I understand what you said. But if you're not correct, if the Gompertzian theory is correct, Doctor, then you wouldn't be able to take any particular given day and indicate that there was doubling going on on that day, as opposed to saying there was a certain period of time or a day where it increased dramatically.

A I don't think there are any superdramatic increases in that sense, using the Gompertzian curve. I think it's a sigma shape curve, Art is not my strong suit, but there is a long point in that curve, the majority of that curve which seems to be exponential.

Q There is?

A Linear.

Q I have seen the curve. And it doesn't appear linear at all, Doctor.

A Well, for a part of that curve on the upsweep, it is a straight linear curve to me.

Q Would that, if it were an accurate depiction of cellular kinetics of a tumor, detract from your opinion?

A No, because I still have to go by an average doubling time.

Q I see,

A Otherwise, I would just sit here and be emotional and say last Tuesday it wasn't there, and on Wednesday it was.

Q Or you would say you just don't know, because of that.

A Or I would say I don't know, which would be a more honest answer than saying it wasn't there then, but it's there then in two fixed periods of time, without having to try to give you some scientific explanation how I arrived at that.

Q Is the reason there are different theories because nobody has been able to actually visualize this phenomenon in a person?

A In humans, it's very difficult. Auschwitz is no longer permitted, and a few other things like that. There are lot of animal studies, and constantly coming up with formula as to what they believe. And I guess Phil Skean, S-K-E-E -- I don't know, I don't want to a hundred percent risk spelling Phil Skean's name -- has written extensively about those various formulas. And he is spending his lifetime doing that.

Q I am going to go back again, Doctor, because I am afraid that I left another area. We will come back to this in a minute.

A I will stay wherever you want,
Q Lead time bias, you started explaining it to me with the two people. I think we got off on another tangent. I am not sure I understand what it is.
A I thought I explained that very handsomely.
Q Well, it must be my total inability to grasp the handsome explanation, and I apologize.
A Accepted. As I gave that example, one person, they both got cancer on the same day and died the same day ten years later. One bad a diagnosis of say one centimeter cancer in that example, and lived five years, had a recurrence, and died. The other had had the primary diagnosis at a large size tumor. I think I said eight centimeters, had a short survival time, and then died. And I said without, or I hope I said that without knowing when both got their cancer, it appeared superficially that if the second patient, the one who came in with a large cancer, had come in when the first person came in, look what we could have done for that survival. And it appeared that the first person who came in early lived two and a half years longer than the person who came in late. But in reality, all we did was know about the cancer two and a half years sooner. And they didn't live one day longer. Now, perhaps it was a difference in local

zontrol, depending on what tumor there was.

Q So you're saying that with certain types of, I sssume you're saying that with certain types of tumors, it just doesn't matter when you find it, because of this lead time bias?

A It doesn't matter when you find it if the cancer slready has spread beyond the confines of a cure. It matters when you find it, if it has not spread.

Q Now --

A We are both in agreement on that,

Q Now, let's get back to the doubling time different theories, Mow that doesn't tell you, does it, Doctor, at what point a tumor metastasizes?

A Just as such, absolutely not. You're correct.

Q The conclusion you're reaching, I take it, is from some estimate that you're making from the size of the lesion found in the liver; is that correct?

A And the lymph node, yes, correct.

Q And you're extrapolating from the measurement of that, how long it had been there; is that what you're saying?

A Using an average doubling time, correct.

Q Could you tell me, Doctor, what, and since we are using averages, and that would be referred to as what,

median?

A There is a difference between average and median,

Q What's the difference?

a Are you testing me or are you asking me?

Q No. If there is going to be a difference in nomenclature and terminology, I need to know that so we are never confused at a later point,

A I use the word average doubling time.

Q Right.

A And average means the average. You add them all up and you divide it by the number of examples. And that comes out with the average. The median example for death, it's one half the people have died by. And if there are eleven people who die, when the sixth person dies, that is the median.

Q Why would that be different than the average?

A It can make a big difference, depending on the number in a series or how it comes out. Example, you can have most people die. We will make it a short example.

Q All right.

A In one month, and one person live thirty years. And you average that up. We will make it a series of eleven. Average that up, and that is going to make one hell of an average. You take the median of those ten

people who died in one month and one person who lived thirty years, and the median comes out one month.

Q So which, if you got a large study, under what circumstances would you use?

A In big numbers, it doesn't make very much difference.

Q All right. Would you tell me, Doctor, what the median survival time is for a person with a lesion in their liver?

A Give me some more information,

Q I don't know that I have more. Didn't you do a study on that, Doctor?

A Sure, but you didn't tell me what cancer was in the liver. You didn't say if it was lung cancer or colon cancer.

Q Colon cancer.

A Our review here at the Pennsylvania Hospital that we did some time ago, and we did it for a ten-year period, the median survival I think was a hundred seventy-eight days.

Q Meaning that once a person got it in the liver, well, actually it was from the point of diagnosis that you did the study, correct?

A That's the only way we could tell you the median,

Q Sure. And you concluded that the median survival time from that point was a hundred seventy-eight days. How long has Mrs. Vernon survived since her diagnosis?

A I haven't added it up, but it's a lot longer than a hundred seventy-eight days.

Q Is she just the exception that proves the rule, one of the ones above the median?

A I think it probably means several things. It probably means that she probably has a slower growing tumor than somebody who has a fast growing tumor, or it could mean that her cancer was small that was in there and took a while to get as big as, say, the median amount of metastasis that we recognized in that study. In other words, if her cancer is thirty doublings and the median metastasis we recognize might have been thirty-five doublings, she would have five doublings to go until she reached that size.

Q Could you give me some references, Doctor, to the validity of this doubling time theory?

A Gaulliano.

Q Gaulliano, spell that for me.

A G-A-U-L-L-I-A-N-O, Pietro Gaulliano.

Q Where would I find this?

A He had been the previous principal clinical

investigator at the National Cancer Institute. And I am sure he has published in Cancer and many other journals.

Q I mean is there a specific article or text or something where I can find something espousing this theory?

A He has lots of articles published. I just can't, on my fingertips -- I am good, but not that good.

Q Anybody else?

A John Spratt.

Q That's the individual you referred to before.

A I don't know if I did or not. John Spratt is in Louisville, S-P-R-A-T-T. And it might be junior. There are two John Spratts. One is the son. And I can't think of his middle name. Be has a different middle name.

Q Okay.

A The junior is the oldest, I think,

Q Anybody else?

A John Myers, Phil Skean.

Q I am sorry, John Myers, Phil Skean?

A Phil Skean.

Q How do you spell that?

A I am not very good at spelling. Math and spelling are not my strong suits.

Q Are any of these recent articles?

A I couldn't give you dates on them, but --
Q Is there anything published in the last five years that you are aware of that has espoused this theory?
A About tumor growth and doubling?
Q Yes.
A Lots of things.
Q What?
A I know you want me to spit these things out and give you the reference, but there is a medical oncology text with Calebrese, Shine and I think it's Rosen, published in '85, which lists tables of the doubling time.
Q Any others?
A When I am asked a specific question, 1 am not really set up for it. There are lots of others. I don't have them fast at the fingertips for you.
Q Okay.
A Walter Bower is a pathologist out of St. Louis who published an article, not necessarily on colon cancer, but on lymph node matastasis, calculating when they arose in the lymph node, using Gompertzian tumor growth.
Q Which is different than doubling time?
A No, he used doubling time, but used Gompertzian tumor growth to go through it. And you have to have a time.

Q Have you written anything on doubling time, Doctor?
A No, I have not. Edwin Fisher has written about it.
Q He has contributed to some of these studies that you have.
A Yes, You did very well for not having a CV.
Q I try,
A Or you read very fast.
Q How long was there any cancer in Mrs. Vernon's liver prior to April of 1988?
A Nobody can give you the exact date when it arose there, If we use an average doubling time, we can come up with some calculations.
Q Have you done that?
A Yes. I have to get it out. I think she had, well, she had measured by the pathologist essentially about a half centimeter of cancer that was removed from each one. And I can't be sure if the entire lesion was removed or just biopsied, but assuming each of those to be five millimeters or greater, but five millimeters.
Q Is that a half a centimeter?
A Half a centimeter. At an average doubling time, and again I use the average doubling time of a hundred days, then it's been there for a very long time, twenty-seven hundred days.

Q Twenty-seven hundred?
A Yes.
Q So she survived, let's see, you said the average was a hundred seventy-eight or the median was a hundred seventy-eight?
A I said the average at the time of diagnosis we made was a hundred seventy-eight. I didn't say in that article, at least I don't think we said in that article when those tumors arose. We just listed how long they survive from the time of diagnosis.
Q And it's been almost a year since diagnosis. So that's another, let's say, three hundred days. So how big should it be now?
A How big should it be now?
Q Yes.
A If she survived three hundred days and there was no effect by the chemotherapy, and we go through three doublings, it should be well over -- well, we don't have -- I have to back up, as you do. We don't have a specific size for the one lesion that was not removed. But somewhere we have a specific size where it's measured to another measurement. If we went three hundred days essentially, if the doubling time is three hundred, went three hundred days with measurements at the start of the

three hundred and measurements at the end of the three hundred, it went through three doublings. So if it was one centimeter, it should have been two centimeters. If it was three centimeters at the start of that three hundred days, it should be six centimeters.

Q You're talking about the one remaining now, right?

A No, I am talking about -- you said to me, I think, she lived an extra three hundred days beyond that.

Q Yes.

A How big should it be during that three hundred days? And I am answering that using an average doubling time of a hundred days, it went through three doublings. And the example I am saying is if it was three centimeters at the start of that three hundred days, it should be six centimeters. If it's two centimeters at the start of that three hundred days, having gone through three dsublings, it would be four centimeters in size.

Q If it's doubled three times, why would that be true, Doctor?

A Because it takes three doublings to do that.

Q Three doublings for it to double?

A To go from one centimeter to two centimeters.

Q Takes how many doublings?

A Three doublings. And I did say, I know it's

confusing, and I did say each doubling doubles the volume of cells, And a volume is just another one dimension. It's basically a three dimensional act. So to go from a one by one by one to a two by two by two, which I'm referring to as one centimeter, and I assume you're thinking of a one centimeter going to two centimeters, it takes three doublings to do that act,

Q So if we extended this doubling time theory backwards, you could tell me the approximate date at which point it had metastasized to her liver, could you not?

A Some approximate.

Q Why don't you do that?

A I did that.

Q I am sorry. You said twenty-seven hundred days.

a I don't have the absolute sizes. I may. I can't tell from the operative note whether those metastases which he said were biopsied were excised as the biopsy, because each of the specimens have two measurements,

Q That's when at a minimum it would have metastasized to the liver?

a At an average doubling time of twenty-seven hundred days.

Q You're saying an average doubling time of a hundred days?

A Yes, a hundred days, I apologize.
Q That's okay.
A Right. I did say twenty-seven hundred.
Q Where did you get the hundred day doubling time figure, Doctor?
A That's fairly much of the standard reported doubling time for colon cancer. Some are reported a little longer. The Swedes report a longer doubling time.
Q And could you cite me the somebody who reports a hundred day doubling time?
A I think that reference I gave for the medical oncology book might have been ninety-six or ninety-three days. But it was approximately a hundred days is what they listed also.
Q You were provided with the slides, the pathology slide, correct?
A Correct.
Q Is there anything in those slides that either adds or detracts from your opinion?
A Adds or detracts from?
Q Your opinion,
A No, except that we measured the tumor essentially and the lymph node involvement.
Q There were two nodes?

A Measured the tumor that we saw in the lymph node, which came out about a half centimeter also.
Q And what does that tell you, Doctor?
A Everything that we just said before for the liver pertains to how long it went to grow that long in the lymph node.
Q Is it --
A It went through the same number of doublings in the lymph node to reach one-half centimeter as it does somewhere else to reach one-half centimeter. The number of doublings is fairly constant.
Q How did it travel from the colon to the liver, through the lymph nodes, through the blood, how?
A It's hematogenous spread.
Q What does that mean?
A Blood. Now, it's possible it could have been in the lymph and then mixed in the blood where the two join, and get back to the liver that way.
Q Would it have gone to the lymph before it got to the liver or at the same time or do you know?
A Since these tumors are essentially the same size, they embolized and grew at approximately the same time.
Q Would you have -- maybe this isn't a fair question and if it isn't, tell me. Would you have anticipated any

indications, symptoms at any point in time in this process?

A I don't understand that question. You have to help me on that question.

Q See, I told you it may not be fair,

A It was very fair. I am just a surgeon. I didn't understand the question.

Q Once cancer has metastasized to the liver, does it generally result in any symptomatology to the patient?

A It will at some point,

Q Okay.

A But it's not until there's very extensive liver replacement.

Q I don't understand your answer. What do you mean extensive. How extensive does it have to be?

A It takes a great deal of replacement by tumor just to alter the liver function tests. You can easily remove half the liver and not notice any alteration on the liver function.

Q I guess maybe that's not what I'm asking. Maybe it is. When you say alteration of liver function, are you talking about something that would be noticed by the patient?

A Perhaps. They might have some yellowing of their

eyes, or depending on the extent of the tumor, some other symptoms, may have pain or discomfort or especially if the tumor bled either into the tumor or into the abdomen, they could have symptoms. But the majority of people, unless they get symptoms from size of the tumor, size encroachment, usually have no symptoms relative to the matastasis in the liver, unless it obstructs a major duct or unless there is massive, massive liver replacement by tumor.

Q So you would not have expected her to have any symptomatology then?

A No. It's often a surprise to the operating surgeon, even if he does a liver scan and finds matastasis, it's often a surprise.

Q Is rectal bleeding a general good prognostic sign, as opposed to obstruction, for example?

A You mean bleeding from a cancer?

Q Yes.

A As opposed to one of the others?

Q Yes.

A Obstruction in general is not a good prognostic sign. Left colon cancer obstruction in the National Surgical Adjuvant Breast Project was not a serious prognostic sign compared to right colon obstruction, which

Is a very bad prognostic sign. But rectal bleeding is not necessarily a prognostic sign, maybe an indicator, but not necessarily a prognostic sign that I'm very familiar with as to good or bad. It sometimes is involved with something called symptom bias, where a tumor may be discovered smaller because of the patient's symptom leads you to find something.

Q So it could be good in the sense of it providing a clue to someone who, assuming they were looking, would be able to find it sooner?

A I understand the question. The answer is yes.

Q Is age a factor, in your opinion, in terms of prognosis?

A As an absolute, probably not. I have the feeling there is an occasional article. And we have had some young patients in our practice who have adult cancers and do not do as well. But I can't give you out of our practice, certainly, a statistic that they do very badly. The few very young people I have had in the last thirty years have not survived. But there aren't very many articles, and it is very uncommon, you know, on the point of maybe one percent or at the age group of this unfortunate young lady.

Q So you don't believe that it is necessarily?

a I can't absolutely say that it is. I have the feeling this is emotional response rather than scientific response. And there is a big difference between the two. It is my impression they do less well. But would I bet the ranch on that, no, I won't bet the ranch on that because I prefer having a scientific answer. There is some literature that implies that some of the younger people don't do as well. I can't give you hundreds and hundreds of patients in series, which is what, from my absolute opinion, it would take, compared to the absolute hundreds and hundreds. And it's tough to get hundreds and hundreds of twenty year olds who have colon cancer to compare to hundreds and hundreds of sixty year olds with colon cancer,

Q That's true. You have to factor in staging too.

A Right. You're absolutely right. So a lot of that is my personal feeling rather than my science,

Q If a tumor is not well-differentiated or poorly differentiated, does that make a difference in terms of prognosis?

A To me it does, yes.

Q What's the difference?

A The more poorly differentiated, usually the more aggressive. The more well-differentiated, the less

aggressive.
Q When you say aggressive, what do you mean by aggressive?
A metastasizing.
Q And in your report, you put down poorly differentiated, Is that something that you observed yourself or that you took from the pathology report or which?
A Both.
Q Well, it doesn't say poorly differentiated, does it? It says moderate to poor in the pathology report.
A Okay.
Q Is that --
A Moderate to poorly, It was more on the poorly differentiated. I thought it was grade three on a one to three grading system.
Q Your observations?
A Yes. I am not a pathologist. And I don't testify as to standard. of care, but I thought it was more poorly differentiated than well-differentiated.
Q Well, you said a couple things there, Doctor. On the one hand, you said you're not a pathologist; on the other hand, you're telling me what you thought it was from a pathological standpoint.

A Right.
Q Would you refer to the pathologist's finding?
A I am very happy with his finding. I am not challenging it. I am not disagreeing with it.
Q My only question is your language is different than his.
A Okay.
Q You said poorly. You didn't say moderate to poor. You said poor. Does that make a difference?
A Not to me.
Q It doesn't matter to you?
A We are both on the similar side of the coin.
Q Does that make a difference in terms of when you diagnose the tumor? I mean is it more critical to diagnose a poorly differentiated tumor, as opposed to a good or well-differentiated tumor?
MR. ROBERTSON: Object to the question, because I don't understand what the word critical refers to.
BY MR. KAMPINSKI:
Q Critical in terms of curing the patient.
A I think I understand the question.
Q I am sure you do,
A And I think you're asking, depending on the cell

type, degree of malignancy, poorly differentiated, well-differentiated, so on, is it critical to find it at a different period of time, so that the chance for cure is better compared to a well-differentiated. I think that's the question.

Q That's fine.

A To help explain it, which may not satisfy you, there is a window, a narrow window in which these cancers are cured, that window being the time where you may find it and it has not yet metastasized. That's the only time it really counts. And the window may be more narrow and probably is a little more narrow in the poorly differentiated or high grade cancer or more aggressive cancer, I am trying to all say the same words, than one that is well-differentiated and has a little wider window, opportunity for cure, But I believe that opportunity is very early on in the natural history of that tumor, and that we tend to think and mistake small cancers for early. It just means that they are small,

The clinical portion, when we can find something in any of the cancers, is the shortest period in the natural history of that cancer. And much of it has been decided, spread or no spread, biologically, fortunate or not fortunate, long before you have a clinical cancer.

So that window opens and shuts way back at an earlier time for most people before it's a detectable cancer.

Q You're saying, if I understand correctly, that she was a Dukes-D as far back as twenty-seven hundred days prior to the diagnosis?

A Correct. If the average doubling time is a hundred days, that's the example.

Q Had it just spread to the lymph nodes and not to the liver, does that make a difference in terms of potential of cure?

A Had it not spread to the liver and it's removed and there is no other spread?

Q Yes.

A And it's all out. Then she is cured.

Q Then in other words, you can in fact treat involvement of two lymph nodes.

A You can treat involvement of ten lymph nodes if you take them all out. I may have mumbled, if I didn't earlier on when we were talking about breast, there are some with multiple lymph nodes who appear to survive and those with negative,

Q You did --

A And no matter how good your prognosis is, some are going die. No matter how bad it is, some seem to live.

Q You also put down that the tumor was mucinous in your report.

A Yes.

Q There is a reference in the path report to that word. But I don't know that it's necessarily in reference to the entire tumor, if you could help me out on that, Doctor.

A I referred to it because he referred to it as pools of mucin suspicious for metastatic mucin producing carcinoma in the liver.

Q And --

A And that I assume she does not have two separate tumors. And I don't believe she has two separate cancers.. And mucin producing cancers spread to her liver. And it's different than the colon cancer.

Q You just lost me, Doctor.

A Okay.

Q There is a number of Specimens.

A Correct.

Q You looked at them.

A Yes. Page one of the pathology report, where it says one at the bottom of the first paragraph, left lobe above liver lesion focal pools of mucin suspicious for metastatic mucin producing cancer. And number two in the

diagnosis, it says mucinous deposit in liver.

Q Number two in the what, diagnosis?

A Diagnosis.

Q I am sorry. Go ahead.

A I don't believe, I do not believe that she has a different cancer other than the colon cancer that spread to her liver. I think they are one and the same. And so it does produce some mucus. It's a mucin producing cancer.

Q Is that important in terms of prognosis or diagnosis?

A Mot for diagnosis.

Q How about prognosis?

A Mucin producing may be, and depending on the type, worse. If it's a signet cell mucin producer, it's very bad. This was not.

Q That means what, that it wasn't very bad?

A This lady, it doesn't make any difference whether I call it good or bad, she will die from her cancer, so it's bad.

Q But it doesn't --

A A mucin producing cancer, as such, especially if it produces Large amounts of mucin, it is not a good prognostic sign.

Q Does it produce large amounts?
A It produced enough for the pathologist to recognize it in the liver.
Q If you look on page two, Doctor, under microscopic description.
A Yes.
Q And there is nothing mentioned about mucin in specimen one, right?
A Okay.
Q Number two, there was a nodule showing pools of mucin, right?
A Yes.
Q But they failed to show neoplastic cells, right?
A Yes. Go ahead.
Q So was that even a cancerous specimen?
A I believe they didn't demonstrate the cancer in whatever they looked at under the microscope, but the liver in and of itself doesn't produce mucin, If you ask my opinion, she had a cancer that produced that mucin. I understand we are into some semantics. And if you want me to say there is no cancer there, I will say there is no cancer there,
Q I don't know if it is or isn't. He goes on to say, "It may represent an old bowel duct cyst."

A Okay.
Q I read that correctly, didn't I, Doctor?
a Correct.
Q So that can you draw the conclusion from that that it's mucin producing cancer from that specimen?
A I can't absolutely say no. This is one I would probably put the ranch on, that it's mucin producing. But I can't say that,
Q Are there ranches in Philadelphia?
A As a matter of fact, there is one ranch I wouldn't mind owning.
(Discussion off the record.)
BY MR. KAMPINSKI:
Q So getting back to an earlier question I had when you assumed the delay in diagnosis was approximately twelve months, that really had no significance then, right?
a No. I just assumed that by reading this history. I was not given any numbers,
Q Do cells, tumor cells, and I apologize, Doctor, if we have gone through this and this is repititious, but do they always continue to divide or do they, in fact, stop dividing, and can some actually stop forever dividing?
A The answer is some cancer cells never have the

potential to divide. Many cancer cells die. A vast number of cancer cells die right in the cancer, in any given cancer. In this tumor, it was listed, as I remember, there was a lot of necrosis in the tumor. And a lot of cancer cells are shed into the circulation and are destroyed by the body's defense mechanisms. I don't know if that --

Q Well --

A -- answers the question you're asking.

Q Partially. Do some of them stop dividing for some portion of time?

A Some of them never have the ability to divide, Mot all cancer cells in the growth process divide. Many of them never divide, because they die. So the answer is no, not all cancer cells always divide or ever divide.

Q And they go through different generations, don't they?

A I don't know what you mean by generations. Every time they divide, it's a generation.

Q It's a new generation.

A Yes.

Q And can the new generation, for example, stop dividing for period of time?

A Some of those may never divide. Some of them die,

Some of them are shed into the circulation.
Q Can all of them stop dividing, and then later on start dividing again?
A It's not a very simple statement, But the answer is many of them stop dividing. Some may have the potential to divide again at another time, But the doubling time is when the doubling, the volume of cells have doubled regardless of which cells may have doubled. And it's complex because some cells are dying off and some cells are being shed into the circulation.
Q Yes.
A But when you doubled that volume of cells, that theoretically is the doubling time.
Q But if some of them, Doctor, stop dividing, and let's say you have got compartment "A" of dividing cells, compartment "B" of temporarily non-divided cells that can convert to "A," "C" non-dividing cells that have lost their ability to divide forever, I mean that would be somewhat of a fair analysis of the tumor, would it not?
A In any given tumor nodule, what you described was described before by Skipper, And he listed an "A," a "B" and a "C." "A" are people who are active in the cell cycle. They are constantly dividing. Now we are not talking -- we didn't list any of the people who are dying

in this tumor nodule. You're referring to an entire tumor nodule.

Q Right.

A "B" are people not dividing, They are in GO at the present time. And "C" may be mature cells or like me, who no longer have the ability to reproduce. And so they don't decide whether you live or die as such. And they no longer can divide. Depending on the size of that tumor nodule, these compartments vary in size. When you give drugs, as outlined by Skipper, then you may kill this compartment off, Compartment "A" cells come out of GO. And then you have a high labeling index and so on.

Q So there is also cell loss from the tumor volume as well; is that right?

A I said cell death and sells being shed.

Q Doctor, follow with me for a moment, just so I can try to understand, If this is all going on in the tumor, then how is it that you can ever postulate the existence of an average doubling time, because you can't tell, can you, on any given tumor, which cells are dying off, which are being shed, which are temporarily not doubling, can you, sir?

A Can I looking at an X-ray, no. Now are some of these things are arrived at?

Q That's a good question. Now are they arrived at?
A Some of the things are arrived at, such as on a mammogram. Some of this has been reported by Spratt out of the Louisville Breast Cancer Detection and Demonstration Project, where women may have serial mammograms. And they then on these serial mammograms have measured this tumor growth over periods of time.
Q That's a detectable tumor already that's going from a centimeter to two centimeters, right, maybe a million to a billion cells?
A You're right.
Q Has anybody ever demonstrated going from one cell to detectable?
A I don't know that it has ever been done in humans,
Q I see.
A I think they can only do it in experimental animals.
Q Then this is all theoretical, isn't it, Doctor?
A It's theoretical in humans.
Q Then it's theoretical in Agnes Vernon; she is human?
A She is human. It's theoretical how fast they may be growing and non-growing at a non-detectable time. I can emotionally make up a number, but I am trying to be as

scientific as possible,

Q Well, you told me before that in an attempt to be scientific, what you wanted was demonstrable scientific evidence. You wanted this large series of young people you could compare to old people. Doctor, you cannot scientifically demonstrate the theory of doubling time in humans, can you, sir, or no one can?

A You have to back up again, You're saying we can't scientifically demonstrate it in non-measureable tumor, non-measureable tumor.

Q That's correct.

A Don't tell me we can't do it in non-measureable tumors.

Q I didn't disagree.

A You did.

Q I apologize. You can't do it in a non-measureable tumor.

A That's right.

Q That would be up to what point, how big?

a It depends when you first measure it. On a chest X-ray, you might first measure it, if you're fortunate, at a centimeter.

Q Let's talk about the colon cancer in the liver.

z It's unusual to detect it on any of the scans less

than a centimeter.

Q So if you tell me that doubling times from a centimeter to two centimeters can't be measured, and then you arrive at a hundred days, for example, for that doubling time?

A As the average,

Q So what you have done then is postulated from that to work backwards to say, ah-hah, therefore, it must have taken a hundred days for doubling time prior to this point in time.

A I have given you an average. I started out this very conversation by saying I believe tumor growth is decelerating constantly. I have never tried to say otherwise.

Q I heard you also say you may be proven wrong at your meeting next week.

A That's possible. But I --

Q It's all theory.

A I am taking a special interest in how cancer grows by attending these meetings, and as opposed to saying here I believe without any rationale that it was present or not present on a given day and say well, it's my experience, in my experience, that tumor was never present six months earlier. I don't know what that means. But that's an

answer I hear very often.
Q Are you suggesting that you don't agree with Dr. Engleberg?
A I do not know Dr. Engleberg.
Q Have you heard that is his opinion?
A I don't have his depositon.
Q Were you told that?
A I am told that he will probably say on a given time something was not present. Mow, I don't know how you know that.
Q Maybe it's by the same way of your saying that it was present. You don't know that either, do you?
A I don't know that, but I am trying to give you some of what the science is trying tu say when it was present. You're not born at age forty.
Q I don't know what that means.
A It means you have to go through something to get to age forty.
Q I don't disagree with that. If you don't know what it goes through, how can you sit and postulate it?
A How can we argue the biology in court for twelve people or ten people or eight people to make that logical decision?
Q Let's argue it a little differently.

A I don't really mean to engage you in an argument. And I apologize to you for that,

Q I don't think you are. There is no reason to apologize.

A I don't want you to feel that way,

Q That's fine. You would agree, would you not, Doctor, that at certain stages, A, B, C prior to Dukes A, B, C, just as ease of reference, the statistics are very good for curing colon cancer; is that true?

A For Dukes-A, you have a very good prognosis.

Q B?

A Worse prognosis than Dukes-A.

Q But better than fifty percent?

A As a general rule, yes.

Q So it's more probable that you will be cured?

A You will survive five years, correct.

Q And the only reason you say five years is the studies really don't help us much more after that; is that right?

A No, that's not the answer.

Q Okay. What is the answer?

A The answer is that the biology of a colon cancer is a little different, say, than the biology of a breast cancer, wherein a breast cancer, if you're out ten years,

I will never say you are probably cured of your breast cancer. I might say you may be disease-free. If you're out ten years from your colon cancer, and you don't have evidence of recurrence, I would probably say you're cured of that particular colon cancer, because if you survive ten years disease-free with colon cancer, unless you have an unusually huge doubling time, four five, six hundred days, then you are probably cured, because most colon cancers, if they are going to reoccur, usually do reoccur within, well within that ten-year period,

Q Let me just pick up on something you just said, just so it's not left hanging, When you say unusually long doubling time, four, five, six hundred days, you're suggesting that those things exist then?

A Absolutely.

Q So if Mrs. Vernon had an unusually long doubling time, what would that mean in terms of your opinion?

A Two things. It meant it started very long before I said, at an average doubling time of that; and two, it would take a very long time before she dies from matastasis.

Q What would be unusually short doubling time?

A Unusually short?

Q Yes.

A I think when you start getting down under thirty day doubling time, you're in a very short doubling time for colon cancer.

Q Are there people with unusually short doubling time?

A There is a range, and there are some. And those people don't survive very long.

Q What would that mean far Mrs. Vernon if she had an unusually --

A I don't think she would be here right now, unless she had an unusually sensitive tumor.

Q Which was sensitive to the cancer treatment?

A Yes. But if her biology is unperturbed by her chemotherapy, then I think she would have been dead by now.

Q When you say unperturbed --

A Unperturbed, meaning wasn't destroyed, tumor cells weren't changed. Every time she got an injection of something, it killed one log of tumor. Then we have to wait for that log of tumor cells to double again.

Q What if, in fact, the lesion did decrease at some point in time, what would that mean to you?

A It depends on how much it decreased and for what period of time it decreased. Et's not unusual for us to

see in clinical trials or clinical practice, to see a tumor regress fifty percent or something like that.

Q With treatment?

A With treatment. And it's usually a short lived response.

Q So that wouldn't assist you in terms of her biological response?

A No, it wouldn't change. It would change some, but as a general rule, people who have a partial response, as opposed to a complete response, don't have much change, lengthening of survival.

Q Have you asked for Dr. Engleberg's depositon?

A No. But it was sent to me.

Q So you did receive it?

A It was delivered today. I have not had a chance to review it. It was sent to me.

Q Have you written any other reports other than this one in this case, Doctor?

A No.

Q You have testified before, I assume?

A Yes.

Q Have you testified on behalf of plaintiffs?

A Not in cancer, delay in diagnosis.

Q How many times have you testified for defendants?

A Very infrequently. And that's only been in cases of mesothelioma, where I have been the mesothelioma study chairman. It's not necessarily an action against a doctor, I don't think. It's usually been against a manufacturer of asbestos, I guess.

Q Have you testified in colon cancer cases before?

A I will say yes, but I don't know for sure.

Q I guess I don't understand that answer.

A Well, the answer is I think I have, but I can't recall a specific case.

Q And when I say testified, I mean by way of depositon or trial.

A Yes, 1 understand. I think yes, but I don't recall a specific case.

Q Did you testify in court?

A I don't recall that.

Q How long ago was this?

A If I could recall --

Q Do you keep records?

A If I could recall the first one, I would answer everything for you.

Q Have you yourself been sued, Doctor?

A Absolutely.

Q Ever for failure to diagnose?

A Not that I can think of, no. I don't think so.
Q What have you been sued for, sir?
A I was sued once for taking out an appendix that was not an acute appendicitis that I didn't take out.

I have been sued once for draining radiation necrosis in a breast, that the judge later threw out after whatever length of time it took for them to produce an expert witness.

I have been sued once for using the ag laser and destroying somebody's penile condyloma.
Q What was the result of that?
A I destroyed the condyloma, but he said I lost too much tissue. And he lost I think, I don't know the exact terms, but I think it's called consortium time.
Q What was the result of that case, Doctor?
A It may be dropped. I don't know where it is right now.

I was sued once for, I really don't know what I was sued for in that case. It was a breast cancer which I did a lumpectomy, axillary node dissection, treated the lady. I was sued. She developed a matastasis at a subsequent time. I was sued and the referring doctor was sued. And I was subsequently dropped with prejudice.

I have been sued for giving

chemotherapy to a locally advanced kidney cancer who received concomitant radiation therapy and subsequent resection of the tumor, who is alive and well several years later,

Q What was the result of that case?

A We are waiting to go to court, I guess. I don't know. I am sued because they assumed that there was a delay while he got the drugs and radiation of two months or three months. And it may have shortened his survival time, as opposed to being operated on straightaway.

Q What else?

A I am not the operating surgeon in that. I was the chemotherapy doctor in that one. I am being sued for having done an abdominal perineal resection on a rectal cancer, who subsequently died. I am not sure why I am being sued with everybody else, but I have been named in the suit. That hasn't gone anywhere, as far as depositions or anything.

And I am being sued in another breast cancer case, who developed matastasis after lumpectomy, axillary node dissection with negative nodes. And I am not sure why I am being sued in that yet either.

Q Pending?

A Well, no depositions. I don't know. I have been

named. I think that's it. I am sure there are more to come, but I don't feel as badly about it as the first one, which was devastating.

Q Do you lecture or teach on the doubling time theory?

A Whenever I give a talk, E always lecture and talk on that. If I talk about the natural history of any tumor system, I talk about it. When I talk in Washington in two weeks, I will be talking about it. I spoke yesterday at a hospital for grand rounds on breast cancer, and talked about it.

Q Talking about it in the context of this being a theory or espousing it?

A I espouse it. And to me it helps me understand who lives and dies, and when the individual dies.

Q So you are a proponent of the doubling time theory then?

A Absolutely.

Q You had some notes, Doctor, that you were referring to before that apparently were assisting you in your doubling time calculations.

A I will let you look at whatever I have here.

Q Thank you.

A There really weren't very many notes,

Q And the notebook is what was sent to you?
A Yes. You may have that.
Q And you mentioned your writing is not real good, and I concur.
A I want this to be on the record. This is the first time he has really hurt me.
Q Hopefully --
A What would you like me to read to you?
Q Everything. Do you have a Xerox machine here?
A Yes, Do you want me to Xerox this?
Q I would. We can give a copy to the court reporter and give John a copy.

(Recess.)

BY MR. KAMPINSKI:
Q If you would decipher for those of us whose eyes are not very good, how is that?
A Agnes Vernon, January '86, hemocult negative. April 23rd, '87, Roth, internist, schedule BE, possible pregnant, 4/22/88, age twenty-seven female, biopsy, thirty centimeter. I think that's histology, poorly differentiated CA. That one little scribble, you must have messed up with your finger, because I can't read it read it too well myself.
Q From what you told me, it's applicable to you, be

nice.

A **4/23/88**, exploratory laparotomy, three gross metastasis to liver. Left colectomy, two matastasis, right and left lobe biopsy. A third matastasis, not biopsied left lobe. CT scan, liver, CT liver scan. I got something, nine, something, ten metastases. I don't know what that means without having reviewed what the liver scan was, right anterior lobe. **5/11**, liver scan negative. **4/23/88**, **4/24** and **5/19**, CEA all less than three.

Path, I have written down poorly differentiated mucin CA, node **mets** less than one centimeter, liver mets, and I wrote down all the numbers. And I think they are legible. Are they acceptable or do you want me to read them all out loud?

Q Just read the writing next to it on the right side.

A Left it says mucin, left lobe mucinous. And I didn't write right lobe, but it should have been right lobe.

Q Where it says lobe?

A Yes, lobe lobe, it could have been right lobe.

Q Lobe lobe is right lobe. Why don't we stop for a second and explain the numbers to me?

A Which numbers? Those are the numbers that I took off the path report, sizes.

Q Five times .03 times .03?
A Yes, I got these off the pathology report.
Q Those are meaningful in what way?
A Only those are the sizes measured at that point?
Q Those are three?
A By the pathologist.
Q The three dimensional sizes?
A Yes. It appears there were two separate specimens in each of them.
Q Now, am I correct that you used .5, which is the number that we talked about before in determining the --
A I used that as the average for each of them.
Q Well, why?
A I just used them as such,
Q .5 is only one of the measurements on three of the --
A No, but if you ad them both together, it's larger than, isn't it?
Q I don't know. I didn't add them.
A .5 and .8 is larger than .5. .3 and .6 is larger than .5. .3 and .1 comes up to .4.
Q Is that how would you add them?
A If they are both the same.
Q If it's .5 times .3 times .3, that's the size of

one, right?

A I understood that pathology to have, and maybe we ought to look at it, to have two specimens from each of those biopsies. For each liver matastasis that was biopsied, there are two sets of numbers.

Q I am looking at it.

A So number one is liver biopsy right lobe: is that correct?

Q Yes.

A So the right lobe appears to have two specimens. You don't read it that way?

Q I am not sure that's accurate, Doctor. It says a gray and brown segment is .5 times .3 times .3 centimeters, This is completely submitted in number one and a portion .8 times up to .6 times .1 centimeter has been used from a frozen section.

A Then you will have to help me. If you take a portion that is .5, how can you take a bigger piece out?

Q I don't know.

A In other words, he is saying he took a portion out, And the portion he removed, from whatever, is larger than the original.

Q You got them here, don't you, the slides?

A No, I don't. I think they have been returned; is

that correct?

MR. ROBERTSON: Not to my knowledge.

THE WITNESS: We may have them here.

BY MR. KAMPINSKI:

Q Why don't we take a look and see?

A I can't do that. I don't have a microscope, number one. And number two, it wouldn't help us with this. I don't think it would help with this. This says it took a portion. The first one he says this is completely submitted in number one.

Q I see that.

A Then he takes a portion that is bigger than the original, so I assume that there are two specimens. I might be wrong. But I don't understand how you get a portion that is larger than the original. I would like to do that with bank deposits.

Q Let's go slow, Doctor. If a segment submitted was .5 times .3 times .3, and if that contained not only tumor tissue, but tissue adjacent to it, which would be what you typically find, correct?

A If it's completely removed, I don't know whether it was.

Q He removed two lobes, right, or two lesions?

A Yes, But it says it was biopsied. It doesn't say,

from my reading of the operative report, whether they were completely excised. But I assumed they might have been, I don't know. I can't tell that from the operative report.

Q Let's assume they were.

A Okay. Then one specimen arrives,

Q Okay. Wnless he --

A Unless he cut it in half and it took two pieces.

Q Let's say one specimen arrived. And that would contain not only tumorous tissue, but also adjacent tissue that wasn't right. That's what you would expect?

A Provided he excised it through normal tissue, that's what I would expect, yes,

Q What would you see if you looked?

A It's been a while. I can't tell you. It wasn't Last night.

Q Well, you haven't had that it that long, Doctor.

A No, but --

Q This stuff wasn't sent to you that long ago.

A I am not trying to be difficult.

Q Did you look at it?

A Yes.

Q Was non-tumorous or non-cancerous tumor adjacent to the tumor?

A In number one, there was no tumor.
Q There is no tumor?
a As I remember, we just saw the mucin.
Q That was number two.
A Is that number two?
Q Yes.
A Left lobe, number one has got tumor, okay.
Q so --
A I was mixing one and assuming.
Q And of all the specimens, that's the only one. I am sorry. And number three also has evidence of tumor, of cancer?
A Number three, they measure the size of the tumor.
Q That's from the colon, right?
A Correct.
Q We are concerned with what was removed from the liver.
A Correct, that's what you're asking me about.
Q That is what I am asking about. And if you have a specimen, Doctor, that is .5 by .3 by .3 and it contains not only cancerous tissue but non-cancerous tissue, don't you, in using this doubling theory, have to somehow 'determinewhat exactly is just the tumorous tissue?
A That's what we have to measure.

Q Or cancerous tissue?
A You're absolutely right.
Q Can you do that?
A I did that. I don't have the number in front of me for the liver. I just assumed for this example 0.5 centimeters. And as I remember, and I don't have that written in front of me now, the number for the lymph node matastasis was 0.5 centimeters.
Q Let's deal with the liver for a second, because I think we both agreed earlier that the lymph nodes at least you can cure that by excising it, right?
A Well, so can you if you remove it.
Q I am sorry. If you remove the lymph?
A If you remove the liver metastasis, you're cured just the same as removing the --
Q Do you quarrel with what the surgeon did here?
A I have no quarrel with anybody. I am not mad with anybody.
Q Do you have any criticism of his treatment of this tumor?
A I can't and I don't like second guessing somebody who is there at the operating table. And it's not fair for somebody not there to start making judgments. It's very easy to make these judgments. If he was operating on

her for cure, and I assumed he was not, then I would just biopsy her. If I didn't think she was curable by the surgery, if he thought by excising the three metastases he might cure her, then he should have excised the three metastases. He did make a note somewhere about coming back in six months. If they didn't increase in number, he would take them out.

I am not criticizing the surgeon. But he's there, just as a point of discussion, not as a point of adversary discussion. If he is excising all three, then he doesn't have to come back in six months.

Q I understand what you're saying, Let's go back for a moment to the lesion that was, in fact, removed. Would it change your opinion, depending upon what the size of it was, or wouldn't it matter?

A Yes, if it's a millimeter smaller, then I have to calculate on the size of the tumor. If it's two millimeters smaller, let's just assume for this discussion now that there is only one millimeter worth of tumor there rather than five millimeters, the answer would be two thousand days rather than twenty-seven hundred days.

Q Why is that?

A Because despite what we may or may not agree upon, it's accepted that one millimeter is twenty doublings.

Just as it is accepted that one centimeter is just about thirty doublings. So if we said, assuming there was one millimeter worth of tumor there, it has gone through twenty generations to get there. The part we may haggle about is the length of time it took to get there.

Q Let's go just a little slower for my edification. A millimeter is what compared to a centimeter?

A One-tenth of a centimeter.

Q But it's for the one-tenth of the doubling time. It's two-thirds of the doubling time of a centimeter, right? You just said a millimeter goes through twenty generations, whereas a centimeter goes through thirty.

A Correct, at an average doubling time of a hundred days, from what you're saying, using that math.

Q Now, you got one-tenth of the size; that is, a millimeter as opposed to a centimeter. And you got it going through two-thirds of the doubling time that a centimeter would go through, right?

A Correct.

Q Well, if this is a linear growth, then why wouldn't it be one-tenth of the generation time, Doctor?

A Say that again. I didn't understand your question, If we are using an average doubling --

Q Probably because it's very inartfully asked.

A No, I have the feeling that you're delightfully pleasant and crazy like a fox. I think you are a very intelligent attorney. And your questions have been very pointed. And you understand very clearly.

Q Good.

A If you're age twenty, as opposed to age thirty, you have gone through twenty birthdays, as opposed to thirty birthdays. And if it takes one yeas to get there, we are on the same waive length. If each birthday is one year and you live twenty birthdays, you go another ten birthdays, it's a third more. That's how I understand how cancers grow.

Q Well, you have gone up ten times from a centimeter to a millimeter. And you have only doubled --

A You have gone through ten doublings.

MR. ROBERTSON: I don't want to testify, but I think one has to do with volume and one has to do with time.

BY MR. KAMPINSKI:

Q Is that correct?

A Sure. You're comparing time to volume. They are not synonymous.

Q Are you saying volume is not the same thing as the amount of cells that have doubled?

A The doubling time is a time it takes to double the volume of cells. To go from one million cells to two million cells is a doubling time.
Q But that wouldn't necessarily mean that the mass is going to double; is that what you're saying?
A It takes three doublings to go from a one millimeter by one millimeter by one millimeter to two millimerters by two millimeters by two millimeters. To go from one centimeter by one centimeter by one centimeter, it takes three doublings to do that.
Q Three doublings?
A That is a very tough concept. We will try to come up with some nice mechanism to help you understand that.
Q Such as what?
A Some kind of physical demonstration. But I will tell you that it took me a very long time to understand that. I think your experts will probably understand that.
Q Well --
A But it took me a little bit too, because when I initially tried to understand cancer, having been a cancer doctor for a long time, how they grew, and I said, well, if doubled once, it goes from one to two. It goes from one to two as far as one doubling. It went from say twenty doublings to twenty-one doublings, it doubled, And

you doubled the volume of cells.

Q But the mass doesn't double.

A The mass didn't double by going from a one by one by one to a two by two by two. Way back when somewhere this afternoon, I said something about three hundred days or you mentioned three hundred days. And I said, if it was two centimeters at the start of that, then it went to four centimeters. And I said that if it was three centimeters at an average of a hundred days, it went to six centimeters, because it takes three doublings to double that in three dimentions.

It's not you, because I think if you asked most physicians, they would not understand that. And a very largs percent of people who treat cancer would not understand that. It's a difficult concept to visualize.

Q **I'll** tell you what troubles me about this, Doctor. And maybe it doesn't trouble you because you have dealt with it so long. What you're suggesting is that as soon as there is a demonstrable lesion in the liver, that by this doubling theory, you're going to be able to say that it existed for such a period of time that basically was incurable, If you're telling me that a one millimeter lesion in the liver has been there for two thousand

lays --

A For twenty doublings.

Q Okay.

A If you have a ten-day doubling time, it has been there for twenty times ten.

Q Two hundred days.

A But it's not likely, because they are really acute cancers. I mean, they are really acute. I mean you're getting down to cancers like testicular cancers or some very, very rapidly growing cancers.

Q What you're telling me, Doctor, is as soon as there is a least appreciable evidence of a lesion in the Liver, that you're going to be able to say with this doubling theory, it has been there for a long time.

A I think that's absolutely correct. And that's the unfortunate thing about having some cancers.

Q But you have nothing to support that, other than this hypothesis.

MR. ROBERTSON: Objection.

THE WITNESS: For whatever is done experimentally, but I can't support it in humans. It's tough to do those experiments in humans.

BY MR. KAMPINSKI:

Q They have never been done.

A Well, there have been some experiments test marketed in Europe during World War SI in places like Trablinka, Auschwitz and a few places like that, but we can't do that,

Q If you would continue then with reading --

A Anyway --

Q -- the notes?

A We may have a discrepancy as to what the actual size is in the liver.

Q It doesn't matter to you in terms of your opinion?

A No, whether it's a millimeter or five millimeters, it's been there a period of time.

Q I got you.

A **7/15/88,** CT scan, liver mets increased in size. **8/18/88,** liver scan, mets are now seen on liver scan. 8/23/88, MRI, mets right and left lobe of liver, considered a **5-FU** failure. 8/30/88 -- I should say after that, it means there was progression under 5-FU. I just wrote it as failure.

Q What does that mean?

A It wasn't controlling the tumor, There was progression. 8/30/88, operation, insertion of hepatic artery, infusion catheter. Liver mets not identified, and I put question mark. In the operative note, I couldn't

tell that. I got thirty-five, and underneath that 3500, meaning if something went through thirty-five doublings at a hundred day doubling time, it was there for 3500 days, on average and 27-D at a hundred, it is twenty-seven hundred days, average doubling time a hundred days, in that example.

Q Why did you use thirty-five?

A I don't recall at the time. It was something I did today over lunch.

Q That was going to be my next question. This is not an analysis you did at the time that you wrote your report, is it?

A Not the last little bit of numbers, All this other was written when I wrote the report. The analysis was lunch today, the writing underneath that.

Q Twenty-seven hundred days is how many years?

A Math is not my strong suit, but if you divide three hundred sixty-five days into that.

Q It's not mine either, that's why I asked,

A I don't want to spit it out, What I should 'nave done is had it written down and say, well -- and spit it out.

Q 7.39 years,

a I think she probably has a faster doubling time

than that.
Q Well, let's do the one that you used with your numbers, Doctor.
A I used the average.
Q So that she had liver matastasis for almost seven and a half years?
A Yes, if the tumor is five millimeters in size with an average doubling time of that.
Q Just a few more questions, Doctor. If I understand the way that this spreads, is it gets into the blood and is carried by the blood somehow to the liver and the lymph nodes; is that right?
A Tumor cells at some point, as you understand, are shed either into the lymphatics or the bloodstream. And I think you probably know from your experience that the lymphatic drainage at some point drains into the blood system, so whatever tumor cells that may be in the lymphatics that have not embolized in a lymph node, wind up in the blood circulation.

If you have matastasis in a distant site that did not get there by direct extension, it had to get there by blood. There are a couple of minor exceptions to that rule, but it's possible.
Q Why does it go to the liver, as opposed to some

other organ?

A It's equal opportunity. It's not prejudiced, However, if you look how the blood drains back from the bowel, it goes through the portal system, and is one of the first systems it reaches.

Q Okay.

A So just as lymph nodes are in closer proximity, usually the closer lymph nodes wind up with more tumor, as more tumor cells passing through them, my understanding. And so liver is the most common solid organ from the GI tumor, colon.

Q Because it's closest?

A Not because it's closest, because the blood passes through there and then goes back down through a capillary system.

Q The blood does circulate to other areas of the body, thought, also.

A Sure. It can go to lungs. It can go to brain.

Q Why didn't it spread to other organs if it was there for seven and a half years and if it already spread to the liver?

A It's a biologic phenomenon. I mean why hasn't spread since then? It may.

Q Does the blood go to the placenta also when a woman

is pregnant?
A Some blood may cross over into the placenta, not necessarily. The placenta is products of conception. And there is, and I am not an expert in this area, some mixing of blood. And there are some tumors, such as melanoma, that have crossed over.
Q Would you have expected to see any evidence of matastasis in the placenta if, in fact, it had metastasized by that time?
A No. It's very rare that any of that happens. But there have been babies that have been reported to have melanoma that crossed over that barrier,
Q Could this baby have had cancer?
A Any baby can have cancer.
Q As a result of the cancer in her mother?
A Colon cancer?
Q Yes.
A I don't know that it's ever been reported. This one I'd bet the ranch on by saying not likely.
Q Do women who have cancer have a tendency to clot more than those who don't,
A People who have malignancies, some of them are, as you refer to, hypercoagulable.
Q What does that mean?

A It means they do clot more readily. And some of the people who develop cancer require a much larger amount of anticoagulants to get them to a similar therapeutic level of anticoagulation.

Q If you had a pregnant lady who had colon cancer and you knew she had it, and you were treating her for it and she was pregnant, nonetheless, would you do that; in other words, provide her with anticoagulants because of that possibility?

A One, I don't get involved in the care of pregnant women.

Q I understand.

A And hopefully, not inducing any pregnancies anymore, but I would not as a general rule probably recommend it. It would be a discussion, probably a three-way discussion regarding risks to the mother, risks to the baby. And I don't know what the risks of anticoagulation are to the baby. And so as a general rule, I probably would not recommend it.

I can't think of anybody in the last thirty years, who I was actively treating for a cancer, that was pregnant at the same time.

Q So that might be an ob. question?

A It's not a question that I would be comfortable

answering, because there are risks involved that I am not familiar with.

Q Is there anything else in your review of the records or the slides, Doctor, that we haven't discussed, that you feel is important that forms a basis for your being able to render an opinion in this case?

MR. ROBERTSON: Object to the form of the question.

THE WITNESS: That's such a vague question. I don't have any hidden agenda that I'm conscious of.

BY MR. KAMPIMSKI:

Q Doctor, you and I understand this is discovery,

A Okay.

Q And that my purpose here is to try to discover what it is you're going to base your testimony on when you get on the stand.

a We probably hit 99.99 percent.

Q I get real nervous about that .01 percent.

a I don't have anything up front in my head right now that I'm thinking that I left out, because I have discussed everything that I am thinking about that I consciously am aware of.

I'm basically involved in talking about

tumor growth doubling time, cellular kinetics, when tumor cells get into the circulation and things that we have just been talking about. And I have no hidden anything that I haven't discussed in any of the lectures I have given in the last several years.

Q And you see, I haven't attended any of those, so it's hard for me to --

A Washington, April 1st.

Q I think I'm busy.

A I don't have anything that I am consciously aware we are going to spring on you and say we got you.

Q Well, it may be subliminal at the moment, as opposed to conscious.

A I don't think there is anything subliminal.

Q Do you plan on providing an analysis or a report on Dr. Engleberg's testimony, since you have been provided it to review?

A Will I provide an analysis or anything written? No.

Q Just verbal?

A I'll read it, to understand what he is thinking. And if there are things that I really disagree with or think are not quite the way I'm thinking, if he's thinking blue and I'm thinking red, I will say we have a difference

in thought process here.

Q So that, Doctor, if the physicians who actually saw the tumor and treated this lady opine that earlier diagnosis would have resulted in cure, you disagree with that, right?

A I don't think it makes any difference when you see them or who sees them, I should say . I think the biology of the cancer is what makes the difference, and not whether I see him or somebody else sees them.

MR. KAMPINSKI: That's all I have. Thank you.

(Witness excused.)

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TESTIMONY CLOSED

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C E R T I F I C A T I O N

I hereby certify that the proceedings, evidence and objections are contained fully and accurately in the notes taken by me in the above deposition, and that this is a correct copy of the same.

Joan M. Convery

JOAN M. CONVERY
Registered Professional Reporter