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Can Angioplasty Improve Quality of Life for CAD Patients?

**Can angioplasty improve the quality of life for patients with coronary artery disease? You are listening to ReachMD, The Channel For Medical Professionals. Welcome to our series focussed on the heart on ReachMD. I am Dr. Matthew Sorrentino, your host and with me today is Dr. William Weintraub. Dr. Weintraub is the chair in Cardiology and professor of medicine at Christiana Care Health Systems in Newark, Delaware. Dr. Weintraub and his group have been focussing on healthcare economics and cost effectiveness analysis of a number of major trials. He and his group recently wrote a paper on the courage trial looking at quality of life and cost effectiveness.**

**DR. MATTHEW SORRENTINO:**

Dr. Weintraub, welcome to our program today.

**DR. WILLIAM WEINTRAUB:**

Well, thank you, it is great to be here.

**DR. MATTHEW SORRENTINO:**

I thought first we should explain what the COURAGE trial is. COURAGE trial stands for clinical outcomes utilizing revascularization and aggressive drug evaluation trial. What was the basic premise of this trial?

**DR. WILLIAM WEINTRAUB**:

Well, percutaneous coronary intervention has been around since the 1970s when it was invented by Andreas Gruntzig. Since that time there have been a series of trials that have compared percutaneous coronary intervention to medical therapy and in setting of chronic stable coronary artery disease as opposed to acute coronary syndromes, we have not noticed a benefit in terms of prevention of vents or there has been previous reports of improving quality of life; however, each of those trials have been criticized in one way or the other for being inadequate older technology, inappropriate patients, lack of adequate appropriate medical therapy in both treatment arms, both treatment arms not being treated the same and so there was a feeling that a larger more robust, more carefully designed trial was needed. That was COURAGE.

**DR. MATTHEW SORRENTINO**:

Well, I think there is a surprise that a lot of people have when they think about this trial. We have had angioplasty now since the late 1970s and yet what you are saying these trials have not shown that it actually prevents heart attacks or prolongs life to this point?

**DR. WILLIAM WEINTRAUB**:

That's correct in the setting of chronic stable coronary disease and that's different from acute coronary syndromes, different from heart attacks. Patients with heart attacks whether ST segment elevation MI or non-ST segment elevation MI do benefit from PCI in preventing future events, but has not been shown previously in the setting of chronic stable coronary artery disease; however, once again, there has been a feeling that previous trials were really inadequate and that we needed to refocus on this issue and so we designed the COURAGE trial in the mid 1990s and then finished followup of the trial in 2007 and reported our results at that time.

**DR. MATTHEW SORRENTINO**:

Now I understand in this trial everybody received what a call optimal medical therapy, so everyone received, I presume antianginals like beta-blockers and statins to lower cholesterol and then half of the group was randomized to receiving a PCI or not, is that correct?

**DR. WILLIAM WEINTRAUB**:

Yes, that is correct. So I think its worse we iterating just what we mean by optimal medical therapy. Here we treated all the major risk factors, so we treated cholesterol, statins, and we treated blood pressure and we treated diabetes in patients who had diabetes, then we worked on getting patients to stop smoking and to increase exercise and to control their diet and then of course we treated angina and we treated the patients in both arms in exactly the same way into the same goals and then we randomized patients to even receive an initial strategy PCI or initial strategy of optimal medical therapy alone. We did these yet 50 sites in Unites States and Canada. We randomized 2287 patients.

**DR. MATTHEW SORRENTINO**:

And the general outcome of the trial was?

**DR. WILLIAM WEINTRAUB**:

Then we followed the patients for about four-and-a-half years, some patients as long as 7 years and we found no difference in heart events, no difference in death or MI or death alone or MI alone or cardiovascular death or stroke or any other kind of heart outcome. We found no difference between the two treatment arms.

**DR. MATTHEW SORRENTINO**:

So this trial really was no different than previous trials and that again angioplasty was unable to prevent heart attacks or prolonged life compared to very good medical therapy.

DR. WILLIAM WEINTRAUB:

Yes, that's true, a couple of points. In this trial we had optimal medical therapy in both arms. It was larger than any of the previous trials larger by a lot and we used coronary stenting, so we used more contemporary PCI even though we did not have drug-eluting stents. We did use more contemporary PCI. We did have more contemporary medical therapy and we did have aggressive medical therapy in both arms. The other thing is that we really need to be careful that this is a strategy trial rather than about PCI versus medical therapy. This is initial strategy PCI and about a third of patients with medical therapy crossed over to require PCI ultimately. So we really should not think all this trial is showing that PCI is of no benefit, but rather that we could defer PCI and two-thirds of the time we would not need to do it.

**DR. MATTHEW SORRENTINO**:

One of the aspects that you have looked at more carefully in this trial is quality of life in the two different arms. How do you measure quality of life and how was that looked at in this trial?

**DR. WILLIAM WEINTRAUB**:

So, we felt that it is extremely important to look at quality of life because we knew going into the trial that PCI is largely treatment for angina and so we decided to look at this very carefully and we used a standard measure of angina that we have now used in many many trials and this has been used in many registries, the Seattle Angina Questionnaire that the Seattle Angina Questionnaire is different from looking at Canadian Cardiovascular Society angina. Canadian Cardiovascular Society is assessed by healthcare providers and gives the summary in scoring from 1 to 4. The Seattle Angina Questionnaire in comparison is a patient reported outcome, they are assessing their own angina and they do it in 5 domains of angina frequency, physical limitation, quality of life, anginal stability, and treatment satisfaction, but once it really get angina the best, really get the burden or physical limitation, anginal frequency, and quality of life.

**DR. MATTHEW SORRENTINO**:

So this is a questionnaire that patients check off when they come to their followup visits.

**DR. WILLIAM WEINTRAUB**:

Well at a baseline and at followup visits. We got it both at baseline and at followup.

DR. MATTHEW SORRENTINO:

So did you find in this trial that there was a difference in reporting of angina through the course of the trial?

**DR. WILLIAM WEINTRAUB**:

Yes, we did. There we looked it at the several ways. We looked at the mean scores though each of these domains that I mentioned

scored from 0 to 100 and we found that there was a difference in the mean scores between the patients treated with PCI, the patients treated with optimal medical therapy with higher mean scores in the PCI group. Higher scores mean better outcome, so we did in fact find that we had better outcomes in terms of anginal relief in patients treated with PCI or rarely we should say in patients in the PCI or both of these strategy trials in patients in a optimal medical therapy and some of them did cross over, now how long did the benefit last? Depending on the scale, the benefit seemed to last for approximately 2 years, sometimes a little less, sometimes a little more than 2 years. Then we looked at this another way as well. We looked at clinically significant improvement and we looked at the scores and at the scale very carefully for kind of learning called face learning when the scale seemed to make sense and when used by others and published literature for establishing serial criteria for clinically significant improvement in these scores and we found similar results looking at clinically significant improvement, that there was more clinically significant improvement in the PCI group than in the optimal medical therapy group and that this clinically significant improvement would also last for that varies a year or 2 years something like that. The advantage of that approach is that we could also talk about the number that we need to treat to get a clinically significant improvement so it gives an additional set of matrix that we can use.

DR. MATTHEW SORRENTINO:

If you are just joining us, you are listening to our series focussed on the heart on ReachMD, The Channel for Medical Professionals. We are speaking with Dr. William Weintraub and we are talking about the COURAGE trial and the quality of life studies that have looked at angina in this particular trial.

**DR. MATTHEW SORRENTINO**:

You mentioned that you are able to actually look at the number needed to treat PCI versus optimal medical therapy, what ballpark was that number and how many patients do have PCI to have a significant reduction in angina?

**DR. WILLIAM WEINTRAUB**:

So its going to vary depending on the scale and depending on the timeframe, but its going to be in the range, somewhere in the range of 12 to 18 patients need to be treated for one patient to have a clinically significant improvement in quality of life in the range of about a year.

**DR. MATTHEW SORRENTINO**:

Now you mentioned that there were a fair number of crossovers in this particular trial. Could the crossovers have explained some of the results or if we look at the patients who never did get a PCI, was there clearly a difference between that group?

**DR. WILLIAM WEINTRAUB**:

So it begins to raise problems in analysis, so we are trying to separate out the people who crossed over the people who didn't because then we have a non-randomized comparison, but we can say this to the patient who crossed over especially patients who crossed over early were the most symptomatic patients. They had the worst angina and they had improvement in their quality of life. One of things that was very interesting that we noted was that there was improvement in quality of life in both arms of the trial, in the patients who had PCI and the patients who were treated medically and in the medically treated patients and the patients who crossed over, there was improvement in quality of life than the patients who did not cross over, there was improvement in quality of life. So lot of our patients improved, you know, of course the quality of the medical therapy or we tend to see the patients when they are at their worst of anginas

or coronary artery disease waxed and waned and their importance over time and so we tend to see the patients when they are at their worst than in followup a lot of them do better.

**DR. MATTHEW SORRENTINO**:

So I think that is an important point because even the patients who are on medical therapy as you stated said that their quality of life was better, I think one of the things we worry about is we push medications on patients especially higher higher doses of beta-blocker is that we make them feel worse, but I guess in this analysis both groups had an improvement in quality of life.

**DR. WILLIAM WEINTRAUB**:

Yes, its correct.

**DR. MATTHEW SORRENTINO**:

Now this was mainly angina or whether any other matrix that were looked at in this trial to determine quality of life?

**DR. WILLIAM WEINTRAUB**:

We actually have a number of other matrix in cost effectiveness analysis that we are going to discuss in another time. We also look at utility, which is overall measure of quality of life. We also had a general measure of quality of life, the RAND-36 which has the same information as the SF 36 and is opposed to the Seattle Angina Questionnaire, which is specifically to look at angina, RAND-36 is a general quality of life instrument allowing us to look more broadly at our patients. The results are really quite interesting because the RAND-36 results were quite comparable to the Seattle Angina Questionnaire results, not quite as consistent, which is what you would expect because somewhat more general.

**DR. MATTHEW SORRENTINO**:

So the RAND-36 is yet another questionnaire-type analysis that all of the patients went through on each of their clinic visits.

**DR. WILLIAM WEINTRAUB**:

Yes, that is correct.

**DR. MATTHEW SORRENTINO**:

What type of questions are asked on that type of tool?

**DR. WILLIAM WEINTRAUB**:

So there are 36 questions on the tool that asked quite broadly about people's health and functioning, so gets it, social functioning, mental health, physical functioning, pain, so its very broad.

**DR. MATTHEW SORRENTINO**:

And this tool also showed that the PCI randomize group had improvement in the quality based on the RAND-36 compared to those who were only on medical therapy?

**DR. WILLIAM WEINTRAUB**:

Yes, it did in the areas that you expect physical functioning and pain, but not in such things as emotional functioning in mental health.

**DR. MATTHEW SORRENTINO**:

So, I guess one of the conclusions we can make from this trial, the conclusion I think a lot of cardiologists have thought into over the years is that PCI is a very effective treatment or tool if you will to reduce chest pain, to reduce angina, but it may not necessarily prolong life or prevent heart attacks. Could you conclude that from your analysis?

**DR. WILLIAM WEINTRAUB**:

I think you are overstating that a little bit. I think we could agree on the latter that in an initial strategy in chronic stable coronary artery disease, we did not find that PCI resulted in a decrease in cardiovascular events. All we found was that there was an improvement in quality of life that was sustained for some period of time up to 2 years or so. There's another story about whether there was really value in the difference in quality of life between the two treatment arms that will allow you to say, as you put it, a very effective treatment. Then is a jump is that I think that others need to make rounds than me making myself what I can say is difference between the two treatment arms and that is significant and for some patients clinically significant.

DR. MATTHEW SORRENTINO:

So I guess another thing we can conclude from this trial is we don't lose ground if we don't rush right through angioplasty. It seems from this trial that patients did well when they finally had some symptoms, the angioplasty could be done, those were the crossovers, but it didn't give them a deficit if you will, it didn't harm them by waiting until symptoms drove to cross over.

**DR. WILLIAM WEINTRAUB**:

That's very well put indeed.

**DR. MATTHEW SORRENTINO**:

Has it changed your practice at all, how you look at these types of patients?

**DR. WILLIAM WEINTRAUB**:

Yes, I think it has because I think I feel that while PCI is very useful and I sent many patients for PCI, I really feel far more confident in my decision making about PCI now that I do here for because before COURAGE and despite these other trials there are a lot of patients I felt I just have to send this patient for PCI. I am not comfortable waiting and watching things what happens, but now its far more comfortable with the idea that patients with coronary artery disease can be treated medically and if their angina is more severe then we can send them to PCI at that time.

**DR. MATTHEW SORRENTINO**:

Is this trial apply across all patient groups? For example does it apply as well to women as to men?

**DR. WILLIAM WEINTRAUB**:

Yes, we have not been able to find any group high risk or low risk in whom the trial doesn't apply. There is still worry, that there's a very high risk group out there that we have not sufficiently well identified who would benefit from earlier PCI and we are continuing to look into that and that it may actually require further trials in the future.

**DR. MATTHEW SORRENTINO**:

Well, I want to thank Dr. William Weintraub who is the chair in Cardiology at Christiana Care Health Systems in Newark, Delaware.

**We have been discussing Courage Trial and his recent paper, the effective PCI and the quality of life in patients with stable coronary artery disease. I am Dr. Matt Sorrentino. You have been listening to a special series focussed on heart health on ReachMD, The Channel for Medical Professionals. Please visit our website at www.reachmd.com, which features our entire library through on-demand podcasts or call us toll-free with your comments and suggestions at 888-639-6157 and thank you for listening.**