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Sudden Cardiac Death in Athletes

SUDDEN DEATH IN ATHLETES

You are listening to ReachMD, The Channel for Medical Professionals. Welcome to Heart Matters, where leading cardiology experts explore the latest trends, technologies, and clinical developments in cardiology practice. Your host for Heart Matters is Dr. Douglas Weaver, president of the American College of Cardiology.

Sudden cardiac deaths are rare among the elite athletes. Yet these abrupt events are confounding in part because they strike some of our most physically dynamic individuals and because there remains a lengthy list of potential causes. How are we advancing our grasp of the underlying triggers of these life-threatening arrhythmias, which often occur during or immediately after exercise. Our guest today is Dr. Douglas Zipes, distinguished professor emeritus of medicine at the Indiana University School of Medicine and past president of American College of Cardiology.

DR. DOUGLAS WEAVER:

Welcome Dr. Zipes.

DR. DOUGLAS ZIPES:

Thanks Doug, pleasure to be here.

DR. DOUGLAS WEAVER:

So, Doug, what kind of problems are present in these individuals that suddenly collapse either during or following an exercise?

DR. DOUGLAS ZIPES:

It depends on the age of the individual. For youngsters, it is usually an inherited abnormality, most commonly in the United States,

hypertrophic cardiomyopathy. In some places in Europe, particularly Northern Europe, right ventricular cardiomyopathy or dysplasia is more common. In older athletes, over 30-35 years old, then it is the usual coronary artery disease that is the cause. Among the younger groups, certainly some of the inherited ion channel abnormalities can play a role as well but hypertrophic cardiomyopathy is the most common.

DR. DOUGLAS WEAVER:

Interesting. Now, for, many of these professionals, did they have any warning or do they know about their disease before the event?

DR. DOUGLAS ZIPES:

Well, some do, the vast majority probably do not. For example, Hank Gathers was a basketball player, died on court some years ago playing for Loyola and knew that he had exercise-induced ventricular tachycardia. Some athletes may be symptomatic prior to an event, so it really varies. Reggie Louis, a Celtics Basketball player had some dizzy spells or frank syncope prior to sudden death, again some years ago.

DR. DOUGLAS WEAVER:

So, do they ignore medical advice or they just think this can't happen to them?

DR. DOUGLAS ZIPES:

Well, I think it's going to be different with different athletes. Obviously, an athlete is driven to perform at a very high level that's what particularly if they are professional, that's what they are being paid for and I would suspect that some of them indeed do ignore symptoms. That's one of the reasons why we published the Bethesda Conference and directed it towards competitive athletes with the feeling that the weekend warrior if symptomatic would stop and hopefully prevent a terminal episode while the athlete is driven to excel and might ignore symptoms.

DR. DOUGLAS WEAVER:

So, is there any screening done for professional athletes, any cardiac screening?

DR. DOUGLAS ZIPES:

Yeah, at a professional level because obviously these athletes represent a huge financial endorsement. I think they are screened pretty well with stress test, cardiac echo, along with the usual history and physical. At the youngster level, high school or lower grades, the screening varies widely depending upon where that individual is. In some states, the screening is not even done by MDs while in others it is more thorough. The group in Italy have mandatory screening and showed reasonably a significant reduction in sudden death that they feel was responsible from the more thorough screening that they do with athletes.

DR. DOUGLAS WEAVER:

And what kind of screening did they do?

DR. DOUGLAS ZIPES:

Well, they do history and physical, ECG, and echo if indicated.

DR. DOUGLAS WEAVER:

And use that electrocardiogram, I guess, to try to at least do a first-level screening?

DR. DOUGLAS ZIPES:

Absolutely. Now, the argument here in the States is that it is not cost effective because of the expense involved and the infrequency with which there occurs sudden death in athletes and indeed that's true but very honestly if that were my son or grandson, I certainly would want the youngster screened adequately. The incidence of sudden death in athletes in the high school level is probably 100th that of the adults, so roughly 1 in 100,000, and obviously you are going to have to screen a lot of kids to pick out that one who might be at risk and then you always run the risk of false positives as well as false negatives.

DR. DOUGLAS WEAVER:

When someone comes to their pediatrician or general practitioner for some pre-sports evaluation, are you suggesting that doing an electrocardiogram is probably appropriate?

DR. DOUGLAS ZIPES:

Yes, it is. The argument is going to be that it is not cost effective, but is it the right thing to do? I think it is and I certainly would encourage that kind of screening to be done. Is it going to be 100% in picking out at risk individuals? No. You hope that the hypertroph is going to have an abnormal ECG that would lead to further evaluation but we certainly know that some hypertrophs can have a totally normal ECG and some youngsters with what is called an athlete's heart, may have an abnormal ECG and that might end up having them inappropriately excluded from sports. So, screening is a very difficult issue. One of the things that I would push even more strongly than screening would be to have a defibrillator present at practices and athletic events because our screening is not going to be 100% and if a defibrillator is there, then you certainly have the possibility of saving the life of the youngster.

DR. DOUGLAS WEAVER:

If you are just joining us, you are listening to Heart Matters on ReachMD, The Channel for Medical Professionals. I am your host, Dr. Doug Weaver. Our guest today is Dr. Doug Zipes, distinguished professor of medicine at the Indiana University of Medicine. We are discussing Sudden Death in Athletes.

Doug, if you identify someone at risk, I guess, you know, what are the options? I guess there are those who might say well I am not

going to participate in sports and is that enough or what do you do next?

DR. DOUGLAS ZIPES:

Doug, we detailed this pretty extensively in the 36th Bethesda Conference that was co-chaired by Barry Maron and by me. The individual with cardiac disease should be restricted from competitive sports if they are at risk for sudden death. And what we did was classify the various sports according to the energy expended and therefore some individuals might be restricted from playing Basketball but could play golf as an example. So, one needs to make a judgment call based on the particular type of heart problem that an athlete has and the kind of athletic event that they participate in.

DR. DOUGLAS WEAVER:

And what about the athlete who actually has had syncope or been resuscitated, what then is done?

DR. DOUGLAS ZIPES:

Syncope is a real warning bell in an athlete and one really needs to evaluate that individual very carefully. So, look for hypertrophic cardiomyopathy, look for ion channel abnormalities, and look for coronary arteries coming off the wrong sinus, those kinds of inherited abnormalities. So, syncope in an athlete is a very strong warning sign.

DR. DOUGLAS WEAVER:

Are defibrillators ever used in these patients, implantable defibrillators?

DR. DOUGLAS ZIPES:

They are and Doug that's a very contentious issue. In the Bethesda guidelines, we say very clearly that having an implanted ICD, then excludes an individual from the competitive sports, strictly those that have body contact for a couple of reasons. One, we are concerned that body blow to the defibrillator or lead might render it nonfunctioning. The second issue, which has not been adequately tested, is how effective an ICD shock is going to be in an athlete who has very elevated catecholamines, who might have some temperature elevation from the participation in the sport, who might have an oxygen debt, we don't really know. Now, there is an argument saying that we are too restrictive and indeed a group of electrophysiologists have said that athletes with ICDs can still participate in competitive athletics and there are a number of athletes with ICDs who do just that. So, this is an unresolved issue at the present time.

DR. DOUGLAS WEAVER:

Do you think that the screening in patients, if you will, the screening of individuals should change, that is, you know, many medical centers now are providing free cholesterol screening. Should we be offering our services to schools to help in screening these young people who want to participate in sports programs?

DR. DOUGLAS ZIPES:

Yes. I think that screening should be thorough and should be mandatory. As I said, the arguments before are cost effectiveness, also the risks of false positive identification, so you identify an individual that you think is at risk, you restrict that individual from playing competitive athletics and it is done inappropriately and obviously that has a major impact on youngsters who feel that particular sport is their entire life. I had an interaction with a youngster who was a basketball player who said when I restricted him from playing, you are taking my life away, this is my entire life, I can not play basketball. So, you know, you run those risks but if the tie-in data are any indication, we can save lives by appropriate screening.

DR. DOUGLAS WEAVER:

And you mentioned the external defibrillators, now I think they are present in all professional events, in fact probably paramedics are and?

DR. DOUGLAS ZIPES:

Yeah, I think it is the professional events but, you know, there are youngsters who die during an athletic event, it's infrequent, commotio cordis, for example, the youngster who was hit in the chest with a baseball or hockey puck who dies from that event could be resuscitated with an appropriate defibrillator shock and the youngsters with the inherited abnormalities that I had talked about earlier. So, I think having an AED at all athletic events regardless of the level of the individual high school, college, professional, would be a very good idea.

DR. DOUGLAS WEAVER:

I take it from your comments, however, that this isn't required by States or any other legislative body?

DR. DOUGLAS ZIPES:

I approached the NCAA several years ago, which is headquartered here in Indianapolis about coming out with a statement mandating that an AED should be at each athletic event and they felt that they really couldn't do that because in some small schools, for example, they might not be able to afford the 1500 dollars that an AED costs. I think that parents could easily chip in and make that available but nevertheless that was the position they took.

DR. DOUGLAS WEAVER:

We have been talking with Dr. Douglas Zipes about Sudden Death in Athletes. Dr. Zipes, thank your very much today for being our guest.

DR. DOUGLAS ZIPES:

My pleasure, thank you.

You have been listening to Heart Matters on ReachMD, The Channel for Medical Professionals. For more information on this week's show or to download a pod cast of this segment, please visit us at reachmd.com. Thank you for listening.