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Unexpected Elevated Blood Pressure: What to Do?

You are just about to discharge a patient and your nurse yelled out, "doctor, the blood pressure is elevated." When do you treat nondiagnosed hypertension?

You are listening to ReachMD, The Channel for Medical Professionals. Welcome to the Clinician's Roundtable. I am Dr. Shira Johnson, your host and with me today is Dr. Michael J. Bresler. Dr. Bresler is a Clinical Professor in the Division of Emergency Medicine at Stanford University and Director of the Department of Emergency Medicine of the Mills-Peninsula Health System. Dr. Bresler has been active in both state and federal healthcare legislation including raising money for indigent patients by getting a surcharge on vehicular fines but today we are discussing what do you do with an elevated blood pressure and when do you do it.

DR. SHIRA JOHNSON:

Welcome Dr. Bresler to ReachMD.

DR. MICHAEL J. BRESLER:

Hello, glad to be here.

DR. SHIRA JOHNSON:

So, tell us how widespread is hypertension in America and how much are we seeing that is asymptomatic and presenting to an ED or an office?

DR. MICHAEL J. BRESLER:

Well, unfortunately, it's almost endemic in our population. There are some studies that show as many as 27% of adult Americans are hypertensive and you know now we have the concept of pre-hypertension which is a systolic pressure basically between 130 and 140 or diastolic in the 90s and if we include that probably 60% of adults would fall into either the pre-hypertensive or the hypertensive category, so it's a major problem in our country.

DR. SHIRA JOHNSON:

I looked at those numbers that you gave me and I was amazed because that is also a very gray zone. Physician looks at that and even

primary care don't always know what to do, so if you are in an emergency department or if it is in your office what are some signs that you need to intervene?

DR. MICHAEL J. BRESLER:

Well, anybody that comes in, you know, has 200/110, nobody is going to miss that but the problem is when we see folks, you know, that are 140/90 that kind of gray area that traditionally we say, you know, don't eat pizzas, you know, go easy on the potato chips but the problem is that there is a significant risk of later cardiovascular problems in people in that gray zone.

DR. SHIRA JOHNSON:

For patients and that we always say start with diet and exercise but when it's a random reading and your doctor tells you that and you are about to leave anyhow, you don't usually take that to heart because you haven't had a life-threatening event and no one has told you this before and you kind of tend to blow it off, so the physician may not be that aggressive in following it, is that wrong, should we be more aggressive in the primary care or an emergency room setting?

DR. MICHAEL J. BRESLER:

Well, of course I am an emergency physician and one of the things that I am glad about it aside from a selfish point of view is that I don't have to have the frustration that primary care docs have in telling Mrs. Jones listen, you got to lose weight, you got to exercise, I know a doc but you know I am taking the kids to school and I am busy and I am doing my job and we all know how hard it is to diet, how hard it is to resist those snacks and unfortunately in our society, you know, we are all rushed and in a fast-food nation, you know, that we live in there are too many temptations for us to not watch our salt and exercise is not always fun as you get older, sometimes it's pretty boring and so while yes technically from a medical point of view we as physicians will tell folks you got to lose weight, you know don't eat too much salt, exercise, and we all know the fact is most people don't do that including us physicians.

DR. SHIRA JOHNSON:

Ya and it's not just <____> it's your whole diet.

DR. MICHAEL J. BRESLER:

Everything ya, processed food, I mean if you look at the label, it's amazing what kind of stuff is in there.

DR. SHIRA JOHNSON:

What about the myth that blood pressure will get elevated or get higher as we get older?

DR. MICHAEL J. BRESLER:

It's exactly that, a myth. In aboriginal societies or societies where people still hunt where they get plenty of exercise and where they don't have the kind of diet we have 80-year-old folks often have pressure 120/80. Blood pressure is not supposed to rise in the human animal, that is artifact or marsupialization.

DR. SHIRA JOHNSON:

Now, I also know you have done a lot of lectures not just nationally but internationally. Is what we are seeing in the United States different than what they are saying in UK or France or Italy?

DR. MICHAEL J. BRESLER:

Well, unfortunately we have sort of for better or worse spread about our influence throughout the western world and now much of the rest of the globe as well and you know we see that in folks that live in other countries will stay with the traditional fish-based diet who then move to the United States and start eating more red meat and more salt, etc. and we see that over time they start to catch up with those that were born here.

DR. SHIRA JOHNSON:

What is the risk of <____> in hypertension in 2009, who was more at risk or is anybody less at risk?

DR. MICHAEL J. BRESLER:

Well, we are all at risk but unfortunately African-Americans seem to be more at risk. They have 1.5 to 2 times the risk of hypertension versus Caucasian and Hispanic, non-African Hispanic Americans. Basically, again you know you see different numbers when you look at different studies but some studies have shown that one in three African-Americans are hypertensive versus one in four, one in five of Caucasians or Hispanics and not only that unfortunately among African-Americans hypertension also begins earlier, there is more likelihood of end-organ damage and some of our major drugs, the ACE inhibitors and the angiotensin-receptor blockers are less effective in black folks. So, we really should be aware of these <____> and of course if they happen to be economically deprived they are often medically underserved as well and don't get their high blood pressure diagnosed or treated.

DR. SHIRA JOHNSON:

For those of you just tuning in, you are listening to the Clinician's Roundtable from ReachMD, The Channel for Medical Professionals. I am Dr. Shira Johnson and I am speaking with Dr. Michael Bresler from Stanford University and we are discussing what you do with an elevated blood pressure and when you do it. So can you remind us what we may have forgotten, a little bit about the physiology of hypertension?

DR. MICHAEL J. BRESLER:

And it's easy to forget, if we recall from that school there is a formula and only give formula, blood pressure equals stroke volume times heart rate times peripheral vascular resistance and so the only way that blood pressure can rise either acutely or chronically and the only way we as physicians can lower it is by altering either stroke volume or heart rate or most importantly for our purposes peripheral

vascular resistance. So what happens is, you know, the risk factors that we all know about, I won't go over them, we all know what the risk factors are of cardiovascular disease and hypertension but that leads to atheroma and increasing stiffness of the arterial wall and that directly mathematically will raise blood pressure. There are also some other factors that are involved. There are vasodilation factors and that is primarily the beta-2 adrenergic system and nitric oxide which increases intracellular cyclic AMP. That is all I am going to say about that. We are clinicians, you know we don't need to know the details of physiology but counteracting that of course there are the vasoconstriction forces, alpha-1 adrenergic innervation and the circulating catecholamines and now for our purposes very importantly something called angiotensin-2 and many of our drugs interfere with angiotensin-2 production or its action that is the ACE inhibitors for example.

DR. SHIRA JOHNSON:

So, if you take the more borderline cases which are often the hardest decisions as you said before and you are seeing them in the office for something else, what type of guidelines do you have or ACEP have, The American College of Emergency Room Physicians, if you start seeing several readings 140/90 or slightly higher what should you do?

DR. MICHAEL J. BRESLER:

Well, The American College of Emergency Physicians has a number of guidelines and they basically recommend that in the emergency department that if a patient has persistently systolic pressures over 140 or diastolic over 90, they should be referred for followup. We wouldn't necessarily start somebody at that level on medication from the ED but they should see their primary care physician for followup. Now, lot of times folks will come in to us with elevated blood pressure, you know the white coat syndrome, I don't know why but sometimes people don't like seeing doctors, you know. You know we are good folks but it's not pleasant to visit the doctor and so we always like to have that blood pressure repeated at least once more before they are ready to go because often that pressure will come down. The initial pressure is very often high in the emergency department but still there are some studies, which show that even with that in the emergency department population a fairly sizable percentage of people do have elevated blood pressure, there is one study in academic emergency medicine from 2007 over almost 1000 patients and 45% were over 140/90 and the third of those had no prior history of hypertension. Now, in my experience the numbers aren't quite that high but still there is significant incidence of elevated blood pressure in the emergency department, some of that is white coat syndrome, some of it is obviously by definition people have an acute medical problem and are uncomfortable but at a minimum if we see pressures like that that do not come down by discharge, then those patients ideally should be referred to their doctors for further evaluation.

DR. SHIRA JOHNSON:

Suppose hypothetically you have seen someone in your office or the emergency room and maybe they are 140/90, they are 150/100 and maybe they have it repeated it's the same and maybe they have got some risk factors, you don't feel an urge to treat them in your office or your emergency department but you want to start them on something. Now, there is a lot of new medications out there, even ACE inhibitors have evolved, what would you like us to know to initiate a safe treatment in these folks?

DR. MICHAEL J. BRESLER:

Well, the recommendations generally are that for outpatient therapy that essentially everybody who is being treated with medication should be on a diuretic. The expert panels have recommended that. I think some good references are the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure from the National Heart, Lung, and Blood Institute. Periodically, they publish guidelines or suggestions and many of these are based on, obviously they are all based on literature, but many of them based on the ALLHAT group which is the antihypertensive and lipid-lowering treatment to prevent heart attack trial group but recommendations of these expert panels are that basically unless there is a reason not to almost everyone should be on a low-dose

diuretic. Now, I was trained initially something like 50 mg of hydrochlorothiazide but we don't do that anymore. We start with a low dose. Now, most patients will need another agent, an ACE inhibitor, an angiotensin-receptor blocker, a beta-blocker, a calcium blocker, etc. but their recommendations really are that we start somebody on a low dose diuretic and often they will need another drug added. If they are another drug and their pressure isn't being controlled, then they certainly should be started on a low-dose diuretic, something like hydrochlorothiazide low dose 12.5 mg, something like that.

DR. SHIRA JOHNSON:

Now, what about in the last five years or 10 years or so it has come up ACE inhibitors versus angiotensin receptor blockers, what's the difference, if you can afford them first of all you have insurance will be one and then second when would you start one or when would you go to the other?

DR. MICHAEL J. BRESLER:

What's a very good question because these are extremely common drugs, just to review a little bit of physiology. We have circulating angiotensinogen, gen meaning the genesis of, then angiotensinogen is converted to angiotensin-1 with the help of renin from the kidneys. Angiotensin-1 is then converted to angiotensin-2 and that is catalyzed by angiotensin-converting enzyme, very aptly named. Now, why is angiotensin-2 important? Well, it's a very powerful vasoconstrictor, it promotes the release of aldosterone which then helps us hold on to sodium and water which raises pressure. Angiotensin-2 stimulates the inflammatory response in the smooth muscles of the blood vessels and hypertrophy of the smooth muscles and it decreases nitric oxide which remember is a sort of intracellular by way of cyclic AMP, a vasodilator, so angiotensin-2 is a very strong stimulus of hypertension and so we have several ways of interfering with this. The ACE inhibitors that is the angiotensin-converting enzyme inhibitors inhibit the conversion of angiotensin-1 to angiotensin-2, so the ACE inhibitors are superb drugs for decreasing production of angiotensin-2. The problem with them besides cost is certain proportion of patients develop intractable coughing with them and the small proportion but a significant one can have angioedema as well, which could be life-threatening. So, we have another class of drugs which acts in the same pathway but these are the angiotensin receptor blockers, ARB, the ARBs, they act to not prevent the production of angiotensin-2 like the ACE inhibitors but to block its effect and they have much less if any tendency toward the coughing or the potentially very dangerous angioedema and so the ACE inhibitors if patients tolerated them are great drugs, if they don't, the ARBs are excellent drugs just as good.

DR. SHIRA JOHNSON:

Can I guess that the ARBs are more expensive?

DR. MICHAEL J. BRESLER:

Ya, very good guess, eventually all the generic but you know right now these are expensive drugs.

DR. SHIRA JOHNSON:

But for the first line drug, you mentioned before starting a diuretic and most diuretics are available in generic, they are cheap and most patients can probably safely start on them, yes?

DR. MICHAEL J. BRESLER:

Absolutely correct and remember also that the ACE inhibitors and ARBs are less effective in African-Americans.

DR. SHIRA JOHNSON:

I wonder if that actually utilizes much as it should because I know a lot of African-Americans I have seen as patients that are on ACE inhibitors anyhow.

DR. MICHAEL J. BRESLER:

Well, if they work they work but if they don't, then the physician should be aware that in anybody that another drug like a beta-blocker or a long-acting calcium blocker might be effective.

DR. SHIRA JOHNSON:

If you look into your crystal ball, do you predict that the medical community will be successful at the early diagnosis and treatment of hypertension and the complications in the future, is prevention working, well we see these numbers go down as we are watching the jobless rate go up, will <_____> will be successful?

DR. MICHAEL J. BRESLER:

Well, I tend to be a cynical optimist. Yes, I think. We have seen an improvement in many epidemiologic factors, smoking, etc. and I am optimistic that over time we will be able to get folks to behave a little bit better including ourselves and that we will be more attuned to picking up elevated blood pressure at an earlier stage and be able to intervene. Yes, I am optimistic and it requires education both for us and our patients but things will get better.

DR. SHIRA JOHNSON:

Even with obesity <_____>?

DR. MICHAEL J. BRESLER:

Well, I think so. It seems that people are paying more attention if you look at the incidents of acute cardiovascular disease, it has been going down and people are taking somewhat better care of themselves but there is a long way to go.

DR. SHIRA JOHNSON:

Thank you for being our guest today.

DR. MICHAEL J. BRESLER:

I have enjoyed it, thank you.

Our thanks goes to Dr. Michael Bresler who has been our guest from Stanford. We have been discussing the management of the unexpectedly elevated blood pressure and I am Dr. Shira Johnson. You have been listening to the Clinician's Roundtable from ReachMD, The Channel for Medical Professionals. Please visit our website at reachmd.com, which features our entire library through on-demand pod casts at your fingertips. Thank you as always for listening.