

## Birthday blues

Milton Alter, MD, PhD

Is it possible that happy occasions such as birthdays have negative effects on some people? I recall a 74-year-old woman, in apparent good health, who dreaded her upcoming 75th birthday. As the day approached, she became more and more anxious. She kept her fears to herself because they did not make sense. The “happy day” arrived and was celebrated as planned. Only some 7 months after the event was she willing to confide her worries to her doctor. She had vague complaints like a headache, dizzy spells, and fatigue but three different doctors found nothing more unusual than a rapid heartbeat. What caused her 75th birthday anxiety? She finally admitted that her mother had died at age 75 and she was convinced that she too was doomed to die at this age.

Such birthday-related stress may actually have a scientific basis. In this issue of *Neurology*, Dr. Gustavo Saposnik and coworkers<sup>1</sup> report that vascular events (like strokes and heart attacks) are more common on birthdays. They suggest that the reason may be stress actually caused by the birthday.

### How was the study done?

The researchers counted all visits to a hospital emergency room (ER) in their region to determine the *expected* number of vascular events that occur on a daily basis. Vascular events included major strokes, transient ischemic attacks (TIAs or mini strokes that last less than a day), and acute heart attacks. This expected number was compared with a control group, which included an expected number of non-vascular conditions. Asthma, appendicitis, and head trauma were chosen as the control conditions because people tend to go to the ER with these problems as quickly as they would for the vascular events.

### What did the study find?

The chance of having a stroke, TIA, or heart attack on a birthday was 27% higher than the expected daily average. However, the number of vascular events that occurred during the birthday week (3 days before and 3 days after the birthday) was no different than the expected number of ER visits. There was no increase in the number of visits to the ER for any of the control conditions on the birthday. Also, there were more vascular events on birthdays than on other special calendar events like Christmas, New Year, or other holidays. Interestingly, mile-



stone birthdays (40, 50, 60) were no different from ones that occurred at other ages.

### What did these findings mean?

The researchers looked for a reason why vascular events were more common on the birthday than any other day. They discovered that the group with the vascular events was more likely to have had a history of high blood pressure. When the subgroup with high blood pressure was looked at more closely, the association between vascular events and birthdays was even higher. This was actually not surprising because it is well known that high blood pressure is a big risk factor for strokes and heart attacks.

The risk of having a vascular event increases rapidly after age 45 years, earlier in men than in women. But even if age is a risk factor that cannot be controlled, why should the risk be increased on the birthday? The article mentions other studies that have shown an increase in stroke, heart attack, and even sudden cardiac death associated with stressful events. Natural disasters (e.g., earthquakes), terrorist attacks, and even major exciting sporting events such as the World Cup Football (soccer) are associated with increased vascular events. These events have in common a tendency to provoke anxiety.

### How can anxiety cause a vascular event?

Anxiety can certainly increase blood pressure and speed up the heart rate, which are vascular risk factors. Normally the arteries of the

heart dilate (expand) during mental stress. However, in people with atherosclerotic arteries (clogged by fatty deposits), these vessels may actually constrict (narrow) with mental stress. When the vessel becomes too narrow a heart attack results. Studies have shown that the risk of a heart attack doubles in the hour after strong negative emotions like frustration or sadness. Mental stress may also cause certain areas of the brain to trigger irregular heartbeats and increase blood pressure.

### What can be done to prevent birthday risk?

Saposnik and coworkers suggest that people with known vascular risk factors should be a little more cautious. They should avoid too much fatty or salty food and alcoholic drinks on the “happy day.” Alcohol can decrease the heart’s ability to contract and increase irregular heartbeats. Too much physical activity and exposure to cold weather should also be avoided. If a big party is planned extra help may be hired to reduce stress. Surprise birthday parties should probably be avoided. A mild tranquilizer might be prescribed if the birthday is stressful. Planning should be done well in advance of the party to avoid last minute running about. These common sense plans, discussed with the patient and family before the birthday, may help assure “many happy returns!” of the day.

### Reference

1. Saposnik G, Baibergenova A, Dang J, Hachinski V. Does a birthday predispose to vascular events? *Neurology* 2006;67:300–304.

### **What makes the brain so special?**

The brain, like all organs in the body, depends on a steady blood supply to function, but it receives way more than its share for its size. However, this is not surprising given all the work the brain does with its own thinking and planning functions as well as masterminding and controlling the body as a whole. The brain has two hemispheres (the right and the left) and, although they are connected, each half controls mostly the opposite side of the body. Specialized areas in the brain control movement of the arms and legs, feeling, speech, hearing, and vision, as well as many other functions. If the blood supply to the brain fails, loss of one or more of these specialized functions occurs *in minutes*. This rapid onset of deficit allows one to suspect that a vascular event has occurred and what part of the brain is damaged. Unlike Alzheimer dementia or Parkinson disease, which evolve over years, a vascular event comes on suddenly, though may progress over minutes to hours. This event is an emergency; it is a **brain attack: call 911!** Quick treatment is needed if the brain tissue that has lost its blood supply is to be saved from permanent damage. Usually, special treatment can be given only within 3 hours of onset of loss of function so a vascular event is an emergency. It is taught that time is brain tissue. It makes sense that this event is called a stroke.

### **Different types of stroke?**

The most common type of vascular event in the brain results from blockage of an already narrowed and rigid brain blood vessel. This is most often due to atherosclerosis (clogging of the arteries with fatty materials). Although this is more common in older people, the process begins many years earlier and can happen even to young adults. This blockage of the blood supply causes an *ischemic stroke*. Sometimes, a thickened and rigid vessel wall forms a blood clot which can block blood flow at the original site. This leads to a massive stroke with lots of damage. However, in

other cases, the clot can break loose, float downstream, and block a smaller vessel in the brain. Depending on the size of this smaller vessel and the area it supplies, the damage may be less. Such a stroke is called an *embolic stroke*. Yet another type of stroke is caused when a weakened blood vessel ruptures and blood jets out into the brain itself with each heartbeat. This causes a *hemorrhagic stroke*. One of the major causes of this blood vessel weakening is high blood pressure. Sometimes deficits like weakness and numbness on one side of the body or loss of speech come on suddenly and disappear after a few hours. This could be a *transient ischemic attack* (TIA for short). Although the patient may rapidly improve, this type of stroke cannot be ignored. It is a warning that a big stroke may be about to happen and medical help must be sought immediately.

### **Different types of stroke treatment?**

Each type of stroke may produce similar signs because the loss of function depends more on the part of the brain that is damaged than the type of stroke. However, different types of stroke need different types of treatment. A person with an ischemic stroke may benefit from a treatment to try to dissolve the blood clot. This type of treatment would be avoided if a person had a brain hemorrhage. The type of stroke can now be determined with studies like a computerized tomogram (CT) and a computerized magnetic image (MRI). The blood vessels themselves can be seen with an angiogram. These sensitive tools help confirm the suspicion of a vascular event in the brain and what area is affected. The best treatment for the particular vascular event can then be started.

### **What are risk factors for stroke?**

The chances of having a vascular event increases rapidly after age 45 years. Men have a higher risk than women until old age when women catch up and even surpass the risk in surviving men. One of the biggest

risk factors for stroke is high blood pressure. This can and should be treated and watched very closely. Diet also seems to play a key role in stroke risk. Obesity, diabetes, and too much cholesterol all can be at least partially, if not entirely, improved by what you choose to eat and avoiding overeating. Lack of regular exercise often goes along with poor fitness and is another risk factor. New risks are being found regularly by researchers. In the present issue of this journal, a new one has been identified that is somehow associated with a birthday. Because we do not yet know what, specifically, about a birthday increases risk, more research is needed. Many of the risk factors for vascular events are controllable and we certainly do not want to stop celebrating birthdays.

### **What can be done to avoid a stroke?**

Have your blood pressure checked regularly and, if it is high, take the medications you are given and follow the advice of your doctor. Change your diet so you have five to seven servings of fruits and vegetables per day, avoid fatty foods (especially deep fried foods and fatty meats), and do not eat too much (only eat when you are hungry, not because you are bored or anxious). Enjoy getting regular exercise by walking, gardening, swimming, or even dancing. If you smoke, stop or get help to stop. Try to reduce stress by taking time for activities you enjoy and people you like to be with. Many of the risk factors for stroke can be controlled: put yourself in charge of doing all you can to avoid this unhappy event.

### **For more information**

American Stroke Association:  
<http://www.strokeassociation.org>

National Stroke Association:  
<http://www.stroke.org/>

American Academy of Neurology  
Foundation:  
[www.thebrainmatters.org](http://www.thebrainmatters.org)

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