

## Acute Aortic Dissection: Who Is to Blame for Its Subsequent Catastrophe?

Tadanori Kawada, MD

### Introduction

In recent years, I have received a rapidly increasing number of requests to advise lawyers and insurance companies, as a medical expert in the field of cardiovascular surgery, on medical malpractice trials or medical error disputes. Interestingly, most of these have been issues relating to disastrous sequences of acute aortic dissection. Moreover, I know there have been other cases in which complicated symptoms and clinical courses have thrown referred physicians and patient's families into confusion. In those cases, the concealed aortic dissection has been identified as the cause of death by postmortem autopsy. These catastrophic results are likely to lead to a medical error dispute between a physician and patient's family. However, is it justifiable that physicians or surgeons must bear the blame for such patient's unexpected death due to ruptured aortic dissection before or even after definitive diagnosis have been made? Below are several cases which have been of considerable concern to me.

### Cases

The first medical dispute case relates to a woman who started experiencing pain in her back in the early hours of the morning. As she was able to travel by taxi and walk into the consulting room of the hospital, the referring doctor never considered the possibility of aortic dissection. The doctor allowed her to go home after a brief medical examination and recommended she apply a cold pack on her back. The next morning she was found dead, and postmortem autopsy disclosed she had a ruptured ascending aorta due to type A aortic dissection. Is the doctor to blame?

The next case relates to a junior high school boy. His

---

*From First Department of Surgery, Showa University, Tokyo, Japan*

Address reprint requests to Tadanori Kawada, MD: First Department of Surgery, Showa University, 1-5-8 Hatanodai, Shinagawa-ku, Tokyo 142-8666, Japan.

stature was not suggestive for Marfan or Ehlers-Danlos syndrome, or any other intrinsic connective tissue diseases. After batting practice in the evening whilst watching television, he experienced severe back pain. His first consulting orthopedic surgeon took a chest X-ray, electrocardiogram (ECG), and even a computed tomography (CT) scan, although no contrast dye was used. No abnormality was found on these diagnostic images. However, the doctor ordered close observation of the boy and he was admitted to hospital. The same day the boy starting complaining again of severe back pain, the situation deteriorated, he went into refractory profound shock and abruptly died in the ward. An autopsy revealed a ruptured type B aortic dissection. If contrast-dye was used when taking the chest CT, an aortic dissection might have been diagnosed. However, why would the necessity of contrast-enhanced CT come to the orthopedic surgeon's mind for this active young boy with normal stature?

The third case relates to a middle-aged man with transient back pain. On arrival at the community hospital by ambulance, he was referred to a highly qualified gastroenterologist as his back pain had settled and he subsequently complained of abdominal pain and tenderness. Routine checks and examinations were carried out and to rule out bowel ischemia, he was referred for a contrast dye enhanced CT scan. Again, the patient suddenly died soon after hospital admission. An acute type A aortic dissection was disclosed by autopsy. As a matter of course, the surgeon and the hospital were accused of misdiagnosis and mistakes in the patient management. I was asked to review the contrast-enhanced CT films by a lawyer. It confirmed that the true channel at the abdominal aorta was so narrow and flat that it was highly likely to be overlooked in an emergency situation. Almost all of the aortic lumen was occupied by the false lumen and the proximal segment of the superior mesenteric artery was seemingly involved in the dissection process. Are general surgeons, who are not used to seeing a dissected lesion of the aorta on CT in their daily practice, to be blamed?

## Who Is to Blame?

Cardiovascular surgeons might have more or less experience with a patient who unexpectedly dies, in spite of effective hypotensive therapy established before operative decisions are made or while preparing the operating room for an emergency surgery. Who should be responsible for such a catastrophic sequence?

Medical expert evidence submitted by accusers or attorneys often states that more than 80% of patients would have been saved and have had the possibility of returning to their normal life if emergency surgery was carried out, or that the patient would have had a high probability of still being alive at the time of their death if definitive diagnosis was made and emergency surgery was performed. They also always conclude that referring doctors or hospitals should take full responsibility for their medical mistakes and demand high monetary compensation for the bereaved families.

Nobody knows what will develop as a subsequent outcome in medicine. It might also be true that there is no other disease more uncertain than acute aortic dissection due to its diversity in the extent and degree of dissection process in the aorta and involvement of the major branches of the vital end-organs. Furthermore, operative interventions, if indicated, are most always carried out as an emergency. A prominent cardiovascular surgeon once described that operative treatment of acute aortic dissection makes even the most skillful surgeon modest in behavior postoperatively since the most skillfully performed operation might not always result in good postoperative outcome.

## Lack of Statistics

Nevertheless, postoperative survival rates of various cardiovascular diseases quoted in medical trial documents are usually based on the annual reports of the overall postoperative mortality in cardiovascular surgeries published in the journal of the Japanese Association for Thoracic Surgery.<sup>1)</sup> Should we consider that these reference data could be regarded as fair and proper even though the risk-adjusted database for acute aortic dissection is still being established?

Postoperative survival rate is only based on the data of the patients who had a chance of undergoing operative treatment completed fortunately as a result of avoiding unexpected aortic rupture or vital organ ischemia before cardiopulmonary bypass had been established. A lot of

patients who had missed the chance of undergoing surgical treatment because of preoperative rupture, deep coma, refractory myocardial infarction, or bowel necrosis have been disregarded. Such cases have, of course, never been included in statistical analysis of survival rate of acute aortic dissection so far.

Twenty-one to 22% of the patients with acute aortic dissection fail to survive from cardiopulmonary arrest due to aortic rupture and/or cardiac tamponade after transferring to the emergency center of the major therapeutic institutes in Japan.<sup>2,3)</sup> To date epidemiologic analysis on the percentage of patients dying immediately after its onset at their homes or outside hospitals has not been established yet.

If the necessity of contrast-enhanced CT does not come to mind of the initial referred doctor, who has a patient with vague pain on the chest and/or back, or if aortic dissection happens to be missed because of difficult-to-interpret diagnostic images to detect the aortic wall abnormality, even if contrast-enhanced CT have been carried out, should all these unfortunate situations be considered as a human or knowledge-based error when the patient abruptly died after all?

## Lack of Policy

Currently there is a very disappointing long-term national project which is not reviewing medical education, and training programs for medical students and postgraduates, or the distribution of the doctors who are not abreast with the changes in Japanese society. So far the population of the doctors who call themselves specialists of very limited range of medical interest has become much higher in Japan as compared to other countries. Therefore, in cases of patients suffering from a fatal disease but still being alive are urgently transferred, they may not be always optimally managed.

We should emphasize that the system errors resulted from the failed national project for medical care system. There is a great disparity between large and local cities in distribution of the therapeutic facilities in which good quality of patient's care is being maintained and emergency surgeries are always dealt with all day long and insufficient maintenance in securing human and physical resources, should be the main subject of the arguments in these medical error disputes. Furthermore, we have to stress that the national policy restraining cardiovascular and other kind of busy surgeons certified as specialists from gaining a little more income than famous baseball

players or TV entertainers must be a disadvantage for maintaining patients' health care for the Japanese nation, especially for the patients who need emergency surgery like aortic repair for impending rupture of the aorta due to acute aortic dissection.

## References

1. Kazui T, Wada H, Fujita H. Thoracic and cardiovascular surgery in Japan during 2003. Annual report by the Japanese Association for Thoracic Surgery. *Jpn J Thorac Cardiovasc Surg* 2005; **53**: 517–36.
2. Kurimoto Y, Hase M, Nara S, et al. Optimal management of acute type A aortic dissection: based on assessment of short- and long-term results. *JJAAM* 2001; **12**: 661–8.
3. Kondo J. Editorial. Contribution of the emergency patient rescue system in acute aortic dissection (translated from the title in Japanese). *Jpn J Vasc Surg* 2004; **13**: i–ii.