When I was a post-graduate student, I came to know the existence of thrombosed type aortic dissection in the study of magnetic resonance imaging diagnosis of aortic dissection. The pathology was called intramural hematoma, thrombosed type aortic dissection or aortic dissection with thrombosed false lumen. It has been said that the cause of the condition was due to rupture of the vasa vasorum. However, experience in different cases and the development of diagnostic technology brought me the question whether rupture of the vasa vasorum was the real cause.

Aortic intramural hematoma (IMH) is a pathological entity and is defined as aortic wall dissection without detectable intimal tear and lack of blood flow in the false lumen. It is said that hypertension related rupture of vasa vasorum is the cause of IMH, however there is no evidence. In 1920, Krukenberg reported the first case of aortic wall dissection without an intimal tear. Vasa vasorum (vv) perfuse the vessel’s wall; arteries and veins distributing mainly in the adventitia. Vasa vasorum are present in the media of the aorta in which the aortic wall thickness is more than 0.5 mm or when aortic thickness exceeds 29 lamellae. There are no vv in the media of human abdominal aorta because it has 28 lamellae. Abdominal aorta is prone to be atherosclerotic owing to avascular in the media.

IMH is characterized by uniform and crescent-shaped low density area in enhanced computed tomography (CT) imaging. How does rupture of vasa vasorum which is very small cause extensive, uniform, symptomatic and progressing aortic lesion in short time? An increase in arterial pressure and compression of the aortic wall results in a reduction in blood flow of the vv. In the situation of higher radial and circumferential pressures within the vessel wall layers it seems very rare to cause rupture of vasa vasorum in the aortic wall. If rupture of vv is the source of IMH, we might be able to see the histological image of bleeding anywhere in the atherosclerotic aortic wall. However, I could not find any images by search.

In 1986, Stanson reported the concept of penetrating atherosclerotic ulcer (PAU) in which thrombosis in the aortic media was included. After that, definition of IMH became vague and there appeared both description, namely IMH with or without entries, in the literatures. ACC/AHA guideline says “IMH may be associated with a PAU” and “When the term IMH is used strictly, no intimal defect such as a tear or an ulcer is present. But in practice, the term is used loosely to mean a thrombosed false lumen regardless of a small defect.”

Multidetector CT is the most sensitive diagnostic modality, but cannot depict all entry tears. Imaging direction, microentry and timing of imaging are causes of misdiagnosis. Uchida evaluated 50 IMH cases which had been diagnosed by MDCT before operations. Of 25 patients, 12 patients in whom an intimal tear was found at operation showed no imaging evidence of intimal tear by MDCT. This means that there are limitations in finding intimal tears with modern diagnostic devices although MDCT is considered most useful in diagnosing aortic dissection. Kitai reported 36% of the IMH patients developed new ulcer-like projection on CT imaging. This tells that the initial CT scan only is not enough to make exact diagnosis.

Another example which supports entry theory is that catheter induced aortic dissection tends to become IMH. I am convinced that every IMH has entries. However, there is still controversy because it is not over an imaginary level. The pathologist who I know says he has never
seen the rupture of vasa vasorum in the aortic wall. If the rupture of vv is the initial event of IMH, it should appear in the ordinary aortic section with different degrees. I think this needs proof.

**Disclosure Statement**

The author has no conflict of interest to declare.

**References**

2) Krukenberg E. Beiträge zur Frage des Aneurysma dissecans. Beitr Pathol Anat Allg Pathol. 1920; **67**: 329-351.