Hypertension and Aortic Dissections

Of the risk factors for developing Type A or Type B aortic dissections, chronic hypertension remains the most common predisposing factor and is present in 62-78% of patients presenting with aortic dissection [5-8]. One of the most comprehensive international studies on aortic dissections is comprised of case series on 464 patients and cites hypertension as present in 72.1% of patients with aortic dissection overall [8]. While chronic systemic hypertension appeared more prevalent in the population of patients with Type B dissections at 76.7% vs. those with Type A dissections at 69.3% there was no significant difference between the high proportion in these two groups (p=0.08) [8]. This contribution to aortic dissection is also remarkable in that the most affected demographic for either aortic dissection type is typically male (65.3%) and Caucasian (82.8%) with a mean age of 63.1 ± 14 years, with the rest of the patient population comprised of only 1.7% African American and 13.5% Asian patients [8]. In each circumstance, the most common presenting symptom was found to be abrupt onset of sharp pain of the utmost severity either in the anterior chest in Type A dissections (p<0.001) or back in Type B dissections (p<0.001), which this patient also experienced. Patients were also found to present with systolic hypertension on physical exam most commonly (49%) with significantly more during a Type B vs [8], Type A aortic dissection (70.1% vs. 35.7% respectively, p<0.001), with Type A dissections presenting significantly more with new-onset murmur of aortic insufficiency (44%, p<0.001), pulse deficit (18.7%, p=0.006), and congestive heart failure (8.8%, p=0.02) [8]. The most common imaging modality used to detect aortic dissection was computed tomography (61.1%) [8], which was used in the diagnosis of this patient (Figure 1).

Only 3.9% of patients with a Type A aortic dissection had experienced a previous unspecified type dissection versus 10.6% of patients with a Type B aortic dissection (p<0.005), making this
patient’s case rare within the context of the International Registry of Acute Aortic Dissection database [8]. Further, in the rare published case reports of Type A then Type B aortic dissection or Type B then Type A aortic dissection in one patient, the dissections occurred within the same post-operative recovery period of up to 3 weeks and 12 days respectively [9,10]. This patient is unique in the current literature in that his dissection occurrences were separated by years after a full surgical recovery, during which time he was burdened with unremitting hypertension.

Discussion

The patient in this case report describes the significance of hypertension in the development of aortic dissection. This patient initially had a Type B aortic dissection but failed to control his blood pressure and developed a Type A aortic dissection. Multiple factors contribute to the development of aortic dissections however hypertension is a key factor. Refractory hypertension had been an increasing problem and can have devastating consequences. Critical to the management of hypertension is both pharmacologic and dietary changes.

The significance of hypertension to the development of aortic dissection cannot be understated. Acute aortic dissection is a challenging clinical emergency and it is the most common acute aortic condition requiring urgent surgical therapy. Prompt surgical therapy is the mainstay of treatment of Type A dissection and medical therapy is the primary treatment for Type B aortic dissection. The patient presented unfortunately had uncontrollable chest and back pain and was therefore treated surgically. This patient demonstrates the significance of hypertension to the development of aortic dissections both preoperatively and postoperatively. Taken together, the patient described should be an example of the key role in maintaining a stable blood pressure.

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