Lesson of the Week

Aortic stenosis and systemic hypertension

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Severe aortic valve stenosis is usually assumed to result in a small volume pulse so that forearm cuff blood pressure is either normal or low. This picture contrasts sharply with that of systemic hypertension, in which the pulse volume is characteristically large. The two diagnoses seem, therefore, to be mutually exclusive. Systolic ejection murmurs are common in healthy people and when present in hypertensive patients are usually not attributed to organic narrowing of the aortic valve but to turbulence from aortic dilatation or sclerosis. Generally, the presence of hypertension would lead a clinician to consider an aortic systolic murmur to be innocent. We report a case in which severe aortic valve stenosis did coexist with systemic hypertension, but that diagnosis was not made until late in the course of the disease.

Case report

A 55 year old white man who had longstanding wheezy bronchitis was admitted initially with an acute respiratory illness. At this time, when his peak expiratory flow rate (PEFR) was low (80 l/min), his heart sounds were inaudible owing to respiratory rhonchi. When his chest condition had improved (PEFR=200 l/min) a loud (3/6) ejection systolic murmur was audible, radiating to the carotid arteries. There was no systolic thrill, and both heart sounds were recorded as being normal. Blood pressure varied between 160/95 and 200/110 mm Hg. He subsequently developed mild non-insulin-dependent diabetes, which was compounded by his obesity (125 kg). At this time the electrocardiogram did not show any evidence of left ventricular hypertrophy ($SV_1 + RV_5 = 18$ mm). The cardiac murmur was not, therefore, attributed to aortic valve disease. There was no history of rheumatic fever.

Two years later the patient suddenly collapsed and was admitted to another hospital. At the time his blood pressure varied between 140/90 and 170/120 mm Hg, and the radial pulse was considered to be of normal volume. The electrocardiogram showed pronounced left ventricular hypertrophy ($SV_1 + RV_5 = 37$ mm) with ST depression in leads V_5 and V_6 . Echocardiography showed a calcified aortic valve and symmetrical left ventricular wall thickening. In view of the mid-systolic murmur aortic valve stenosis was diagnosed and the collapse attributed to cardiac syncope. Subsequent cardiac catheterisation confirmed the diagnosis of severe calcific aortic

Systolic murmurs in hypertensive patients should not be assumed to be due to turbulence, as severe aortic valve stenosis may be present

stenosis, the systolic pressure gradient across the aortic valve being 82 mm Hg. The patient soon became unwell again with acute breathlessness, due partly to left ventricular failure and partly to exacerbation of his chronic asthma, and he underwent emergency aortic valve surgery. At operation a densely calcified tricuspid aortic valve was excised and replaced with a 23 mm Bjork prosthesis. Since operation he has remained well but has continued to need diuretic treatment. Despite this his blood pressure remains raised (190/100 mm Hg).

Comment

The diagnosis of aortic stenosis was initially missed in this patient because his aortic murmur was obscured by respiratory sounds. Subsequently, the murmur became more obvious, but the absence of ventricular hypertrophy and the apparently normal aortic second sound lead us to exclude a diagnosis of severe aortic stenosis. At the time of the syncopal attack left ventricular hypertrophy was evident on the electrocardiogram, and the diagnosis was more apparent.

There are some reports of the coexistence of systemic hypertension and aortic stenosis, but this association may not be widely known. Christian found only two cases of hypertension out of 57 patients with aortic stenosis,¹ but Contralto and Levine reported a 9% incidence of hypertension in a series of 180 cases.² McGinn and White reported that 27% of their patients had systolic pressures over 150 mm Hg.³ More recently, Ikram and his colleagues, found that of 50 patients with aortic stenosis without regurgitation confirmed by catheterisation, 14% had moderate or severe hypertension.⁴ Only 46% of patients had blood pressures below 140/90 mm Hg. There was, however, a tendency for patients who had the most severe stenosis to have lower systolic blood pressures. In a series of 82 patients with aortic stenosis seen at the London Hospital 26 had diastolic pressures of more than 90 mm Hg, and pressures tended to rise after homograft aortic valve replacement.⁵ Clearly, a proportion of patients with aortic stenosis are also hypertensive, and a few have severe hypertension. The exact prevalence is unknown (and is at present being investigated in our own series). The association is, however, probably not familiar to many clinicians. We know of no data on the frequency of aortic stenosis in hypertensive patients. This is the only case encountered in some 700 patients with hypertension seen over five years in our blood pressure clinic. In theory if blood

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pressure in such patients is reduced by antihypertensive medication the systolic pressure gradient may be worsened and heart failure and syncope attacks precipitated.

Aortic stenosis in hypertensive patients should, therefore, be viewed with caution. The lack of loudness of the aortic component of the second sound, which was not apparent in our case, may help in making the diagnosis. In our case the initial electrocardiogram was unhelpful, but cardiac screening might have shown aortic calcification, and earlier echocardiography might have indicated ventricular hypertrophy that was inappropriate to the height of the blood pressure. Hypertensive patients with ejection systolic murmurs should undergo detailed investigation to exclude aortic stenosis.

References

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MATERIA NON MEDICA

King for a day

Diyarbakir is a strange walled town in northeastern Turkey. We found it oppressive, partly because the walls are black and partly because of sullen looks from the inhabitants. Most of our party were obviously American, and we felt that the dislike was directed towards them; we confirmed this by slipping away from the party. It was a very hot day and eventually we sat down in the courtyard of a mosque under the shadow of the minaret. In one corner some blind men were repeating the Koran. A more materialistic young soldier was washing his jeep at the ablutions fountain. A bearded old man was sweeping out the mosque vigorously with a broom. The courtyard was quiet and sleepy until suddenly a crowd of children came pouring into it, headed by a small boy wearing a golden crown and a golden cape. They came over to torment the foreigners but I said, with unwonted patience, "Don't bother about them—it is just a circumcision party." The old man, however, disapproved of the children and brushed them firmly out of the courtyard, and we were left in peace again.

It is only when I mention this, and people say in amazement "circumcision party!" that I realise that, whatever travel does to the mind, at least one becomes accustomed to different traditions. In Turkey when a boy is about 10 or 11 he has an unbirthday birthday. He becomes king for a day and he wears the appropriate golden crown and cloak, and leads his gang in mischief. Towards evening he and his friends, and their families, gather in a public park bringing picnics with them. There are lights and music and the families have an enjoyable evening. In the centre of the crowd there is a platform and during the course of the evening each boy's father takes him up to the platform and before he quite realises what has to happen, it has happened. He is swept down from the platform into the arms of his loving relatives and his weeping checked, by treats and promises of treats and by the cries of the womenfolk that the family is proud to have another man. Sadly, however, he hangs up his golden crown forever.—IRIS J M GIBSON, consultant in geriatric medicine, Glasgow.

Piero at the Polka

Is it only me that finds most children's plays condescending to their audience? As Miss Adelaide might have said, one may be 5 years old but one need not conduct oneself like a slob. Yet always they get offered banal plots—usually a search for something by some cuddly hero or heroine, with adventures on the way and fights against very obvious baddies; the characters have ridiculous names like Flip Flop and Baggyboots and the actors labouring under such titles resort to desperate hamming, all wide eyes, raised eyebrows and loud voices; there is usually some smugly sentimental "message" about being kind and tolerant (maybe the writer's hidden hint to the critics); and *always* a chase, songs, and a shouting match which the audience must join in. The sets and costumes are invariably garish and simplistic—why are children assumed to have no taste?

Ah, you will say, but they like this kind of show—look how they respond. Children are on the whole polite as well as suggestible and if they're taken out for a treat they make an effort to enjoy it. They also like to make a noise, so when some sweating 35 year old actor dressed as a baby penguin wheedles them with "Come on, you will tell me if you see that nasty Grumblechops anywhere, won't you? Shout nice and loud!" they shout nice and loud.

But if you try them with something more difficult they watch and listen with an intensity quite different from the manipulated responses to the "kids' stuff." At the Polka Children's Theatre in Wimbledon recently I sat with an audience of 5-8 year olds at a performance of *Piero Plays His Part* by Peri Aston. The plot was almost Pirandellian in its complexities, telling how Piero first joined the Commedia company, and having a play within the play in which Piero played two parts and had to change his disguises in full view of the audience. The set was a dusky pink villa in front of a beautifully painted backdrop of an Italian landscape; the costumes were elegant; the actors lively and stylish; there were laughs, excitement, tears, and a happy ending, but no "Look, kids aren't we having fun?", no invitations to ooh and ah, no marzipan morality. The audience loved it. So did I.—RUTH HOLLAND, London.

Magazine medicine

"So you're a doctor," gushed the editor. "How wonderful!" My thoughts differed. Frumpy, provincial, and feeling those years of medical training might have been better spent at charm school, I picked inelegantly at the salmon mousse. Those highminded adolescent ambitions to outwrite Sartre had long since sunk to the urge to outsell Harold Robbins. As a start, I had entered the "New Writers" competition in one of the more risqué women's magazines (prove yourself feminism brewed with How to Catch Your Man). Little had I thought that my entry, a somewhat turgid tirade on PMT, would spring me to fame, fortune, TV and a celebratory lunch in London.

As the champagne wore on and my shyness wore off, I felt warmth for the first time towards gynaecology: any subject with such immense literary potential can't be all bad. Moreover, as the journalists at the lunch kept assuring me, a medical degree was a goldmine in itself. One could construct like Cartland, punctuate like Proust, and *still* sell regular features on "Cystitis: the facts" or "Herpes: the hazards." One basic article on the perils of the Pill could be reshuffled monthly and, if all else failed, a female houseman had yet to write her *Tale*: slightly racy, not too frank, with a hint of true love (the cardiology registrar?)

"It must be so interesting being a doctor," smiled the editor. The notion seemed preposterous. What, prefer sputum and intertrigo to dyeing one's hair pink, rougeing one's ankles, and writing creative things about ginseng? "Maybe you've ideas for some medical articles?"

The editor remained charming, even after scanning—and tactfully forgetting—my proposed topics, mentioning only her fascination with alternative medicine, and didn't I see so much scope for other philosophies of illness? Alas, too late: as a student I espoused every crank cause a magazine could desire, but now my enthusiasm for popular fiction did not extend to medicine.

Thus founded my fantasised role of health educator to Gomorrah. I feel secretly guilty at my pious aversion to extolling fashionable health fads, with a lingering suspicion that there, but for my medical training, went I. Brainwashed by the medical model, maybe; I prefer to think of it as maturity. Anyway, no more medicine for me . . . any offers for film rights on my latest spy thriller?—MARGARET A FORWELL, registrar, Glasgow.