Clinical and echocardiographic predictors of recurrence of subaortic stenosis

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Introduction

Obstruction of the left ventricular outflow tract beneath the aortic valve and resultant sub-aortic stenosis (SAS) could represent an acquired condition, being rarely recognized in the newborn period, but common in infancy and childhood. Although surgery for SAS is very effective, recurrence occurs in up to 55% of patients, necessitating reoperation in many. There are conflicting data regarding factors predictive of recurrence of SAS after surgical resection.

This study aimed to determine clinical, anatomical and echocardiograhic pre- and post-operative parameters predictive of SAS recurrence and requirement for further surgery after initial SAS resection.

Methods

Demographic, clinical, anatomical and pre-operative echocardiographic characteristics of 52 consecutive patients with SAS were retrospectively recorded. Type of surgery and immediate post-operative echocardiographic measurements were also recorded and used for the analysis. T-test or the Mann Whitney test were used for parametric or non-parametric variables respectively, to identify differences between patient groups. Multivariate regression analysis was used to determine the predictors for requirement for re-operation.

Results

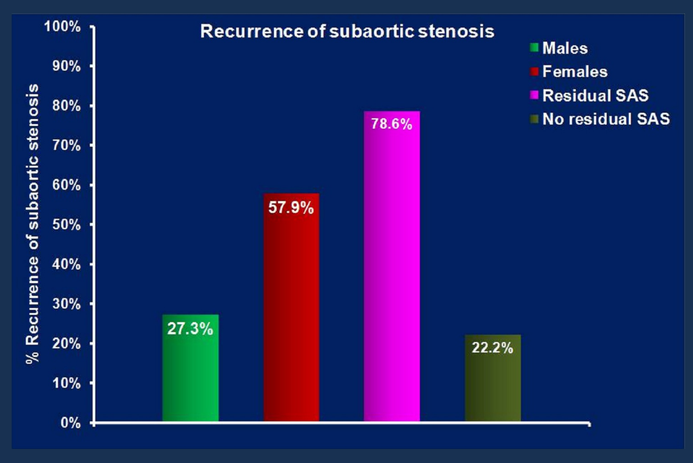

Figure 1. Recurrence of SAS was more common in females (57.9% vs 27.3%, p=0.040) and in those who had residual SAS on echocardiography during the immediate post-operative period compared to those without residual SAS (78.6% vs 22.2%, p=0.001)

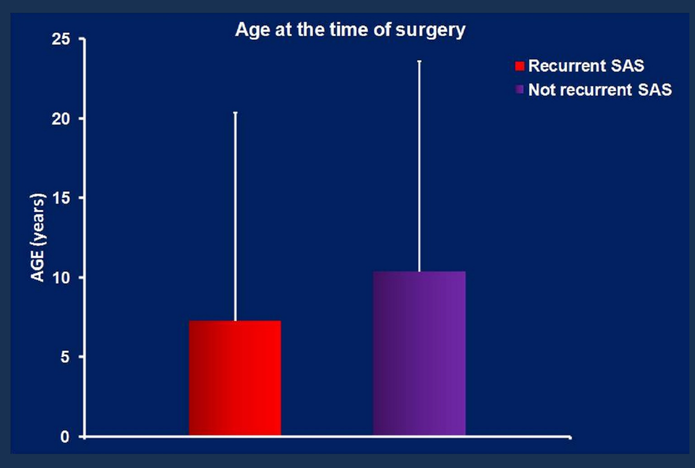

Figure 2. Patients with recurrent SAS had undergone initial surgery at an earlier age in contrast to those without SAS recurrence (7.3±13.1 vs 10.4±13.2 years, p=0.036)

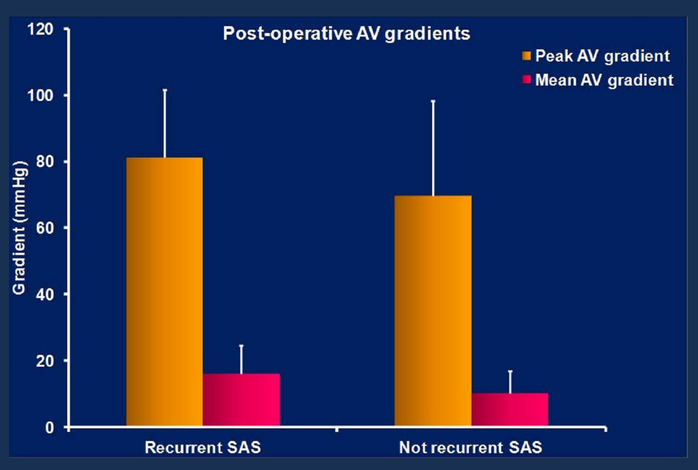

Figure 3. Patients who subsequently underwent second SAS resection compared to those without SAS recurrence had higher post-operative peak and mean trans-aortic gradients (81.1±20.6 mmHg vs 69.6±28.7 mmHg, p=0.021; 16.2±8.4 mmHg vs 10.3±6.7 mmHg, p=0.007).

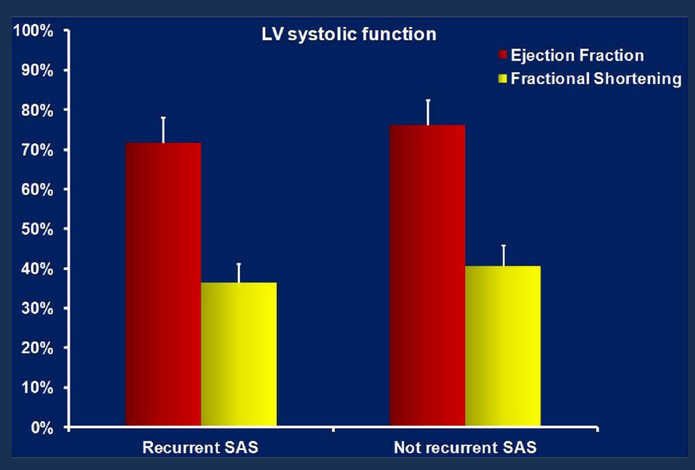

Figure 4. Patients who subsequently underwent second SAS resection compared to those without SAS recurrence had lower left ventricular ejection fraction and fractional shortening at time of follow-up (71.7±6.4% vs 76.2±6.2%, p=0.017; 36.4±4.7% vs 40.6±5.3%, p=0.018).

Multivariate regression analysis showed that the presence of residual SAS post-operatively was the single independent predictor for requirement for re-operation after initial SAS resection, adjusted odds ratio (OR) = 9.782 (2.066-46.320, 95% confidence interval).

Conclusions

SAS commonly recurs following surgical resection, but it is hard to predict which patients will be affected. This study aids clinicians regarding future prognosis by identifying risk factors for patients most likely to require further surgery.