

Pulmonary hypertension in patients with systemic sclerosis – an audit of screening practices and cost over 10 years

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Introduction: Patients with systemic sclerosis (SSc) are at risk of developing pulmonary arterial hypertension (PAH), a subtype of pulmonary hypertension (PH) which is not due to left-heart disease, chronic hypoxia or chronic pulmonary emboli. Screening is recommended due to the insidious presentation of PAH, poor outcomes, and the availability of effective treatments. Transthoracic echocardiography is the standard screening investigation, but NT pro-BNP, a biochemical marker of ventricular stretch, may be a cost-effective initial test with echocardiography reserved for patients with new or worsening symptoms or increasing NT pro-BNP. Our centre introduced NT pro-BNP as an adjunct to echocardiography in 2014.

Aim: We audited our SSc-PAH screening programme from 2009-2018 against the standard that every SSc patient should be screened annually with echocardiography or NT pro-BNP. Patients already seen by the regional PH service were excluded.

Methods: We used our centre's database of SSc patients and electronic patient records to determine if a patient had undergone PH screening. We calculated cost estimates from our hospital's biochemistry and echocardiography departments.

Results: From 2009 to 2018, the number of SSc patients requiring annual screening rose from 80 to 217. In 2009, 64% of patients were screened – all with echocardiography. In 2018, 88% of patients were screened – 25% had an echocardiogram and 83% had an NT pro-BNP. 63% of patients were screened only through NT pro-BNP. Across the 1493 patient-years studied, only 6 new cases of PH were identified. PH was secondary to ILD in two cases, and true PAH in three cases (one patient refused diagnostic right-heart catheterisation). All three PAH diagnoses came from echocardiograms requested for worsening dyspnoea, so are not attributable to the screening programme. The annual cost of screening per eligible SSc patient has dropped from a high of £82 in 2014 to £60 in 2018, and the total annual cost has roughly plateaued since 2014, despite rising patient numbers and improved screening rates.

Conclusion: Since introducing NT pro-BNP alongside echocardiography as a screening tool for PAH in SSc patients, we spend less on our screening programme per patient and achieve higher rates of screening. However, in 10 years, our screening programme has not detected any asymptomatic cases of PAH, raising questions about the necessity of screening asymptomatic SSc patients.

SSc patients screened for PAH 2009-2018 (%)

