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Title: Use of home non-invasive ventilation (NIV) in patients with ankylosing spondylitis (AS)

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Body: Background Ventilatory impairment is a recognised extra-articular manifestation of AS. To our knowledge there are no published data describing home NIV in this condition. Aims and objectives Retrospective assessment of home NIV in AS patients at a tertiary UK ventilatory support centre to determine i) indications for NIV, ii) physiological response to treatment and iii) compliance and survival. Methods Case records of patients referred for consideration of NIV between 1993 and 2011 were retrospectively reviewed and information regarding the indication for NIV, demographics, co-morbidities, arterial blood gas analysis, pulmonary function, mean overnight oxygen saturation (SpO₂), compliance and survival recorded. Results The case notes of 18 patients (15 male, 64±9.2 yrs) were reviewed. Most commenced NIV in the context of acute respiratory decompensation (n=11; 61%). The most frequent indication for NIV was hypercapnia (PaCO₂≥6.5, n=14; 78%). NIV led to a sustained decrease in PaCO₂ from the baseline (p<0.05) and rise in the mean overnight oxygen saturation (p<0.05). Twelve patients have died (68%) with the median time to death from starting NIV of 31 months (range 1-98). The median duration of treatment was 33 months (range 1-99).

Physiological response	Baseline±SD	Follow up (8weeks)±SD	Most recent review (range0.1-8.3 years)±SD
Mean PaO ₂ (kPa)	7.8±1.0(n=18)	8.8±1.2(n=14)	8.0±1.4(n=14)
Mean PaCO ₂ (kPa)	8.1±1.8(n=18)	6.7±0.74(n=14)	6.8±1.8(n=14)
Mean nocturnal SpO ₂ (%)	83±8.6(n=18)	93±3.2(n=15)	92±3.5(n=14)
Mean compliance(hours)		6.8±3.0(n=15)	6.0±2.9(n=13)

Conclusion AS patients demonstrated good compliance with NIV, which was associated with a sustained improvement in physiological parameters.

