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Lung function screening following allogeneic haematopoietic stem cell transplantation

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INTRODUCTION

Chronic lung graft versus host disease is a significant cause of morbidity and mortality post allogeneic Haematopoietic Stem Cell Transplantation (HSCT). Early lung cGVHD can be asymptomatic until significant lung function is lost. Deterioration in lung function tests can be detected prior to development of symptoms. Early intervention is important to reverse or stabilise further deterioration. There is international and inter-institutional variation in lung function follow up and at the time of the service evaluation our centre did not have a formal policy on lung function testing post allogeneic HSCT.

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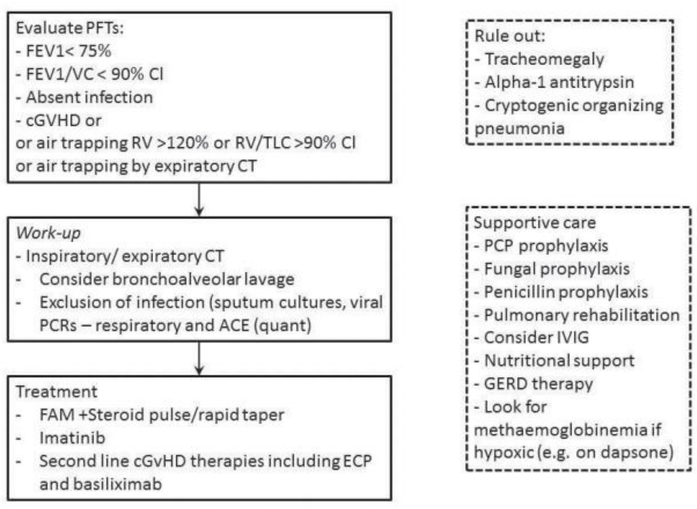
Figure 1 Diagnosis and management of lung GvHD – adapted from [1]



Addenbrookes Lung GVHD protocol
FAM = inhaled fluticasone, azithromycin, and montelukast (FAM) with brief steroid burst (1mg/kg per day prednisone) with rapid taper (0.25 mg/kg per week).
Imatinib is funded by NHS England for cGvHD. (Specialist Commissioning Policy F01X08). It has been agreed as a 2nd line option for refractory pulmonary or sclerodermatous chronic GvHD. The role of imatinib is to treat cGvHD and to act as a steroid-sparing agent/to allow the withdrawal of steroids.

METHOD

A service evaluation was performed to retrospectively assess whether allogeneic HSCT patients were receiving adequate lung function GVHD screening. The group under study were all patients who underwent allogeneic HSCT in 2015 in our centre (n=58). Dates of lung function tests post were recorded (in all cases simultaneous spirometry and gas exchange). The cohort were followed up until March 2018. A sub-group of those with suspected chronic GVHD of any type were examined in greater detail.

RESULTS

Data were collected for the patient group to assess if lung function was checked at least once post transplant, if so it was noted whether this was done within the first 100 days post transplant, or later than a year post transplant.
Of the 32/58 patients who did not have lung function checked post allograft there were 14 with relatively mitigating circumstances for not performing lung function post transplant – either they did not attend their appointment, they had died within the first year post transplant or lung function had been attempted but they had been too unwell to perform successfully.
Removing patients with these mitigating factors for not performing lung function left 44 patients in whom lung function could have been checked, 26 who had lung function checked post transplant, 4 in the first 100 days, 11 within 12 months, and 15 later than 12 months post HSCT. The rationale for performing lung function in several patients was not related to the original HSCT – for example as an unrelated investigation by another department – or was performed as workup prior to second HSCT.

8 patients in the cohort were recorded as developing features of chronic GVHD. Of these 6/8 had lung function checked following the suspicion of chronic GVHD however this was only within 100 days of diagnosis of cGVHD in 2 patients. One patient in whom lung function was planned at 50 days following suspicion of GVHD deteriorated, was admitted to hospital and died so lung function was not performed. Cause of death was listed on the medical certificate of death as 1a Pneumonia, 1b Chronic GVHD.

	Number of patients	% with lung function checked post HSCT	% with lung function checked within 100 days of HSCT	% with lung function checked within 12 months of HSCT
All patients with allo HSCT in 2015	58	45%	7%	19%
With mitigating factors removed	44	59%	9%	25%

Patient	GVHD sites	Days post initial suspicion of chronic GVHD before lung function performed
1	Mouth	48
2	Mouth and skin	35
3	Mild skin	606
4	Mouth and skin	644
5	BO, skin, eyes and gut	218
6	Mouth, eyes, LFTs	246
7	Mild skin and eye	Not performed
8	Skin and gut	Planned at 50 days however patient deteriorated and died before they could be performed

CONCLUSIONS

The service evaluation demonstrated that the majority of patients in our centre are not having lung function checked post allogeneic-HSCT, and that patients with features of chronic GVHD are not all having lung function checked following the diagnosis.

The local GVHD policy was updated as a result of this service evaluation with formal recommendation for lung function screening. Following attempts to address the logistical challenges of increased lung function monitoring the service evaluation will be repeated.

GVHD POLICY RECOMMENDATION

Screening PFTs are now recommended within our service at D+100 post-allo-HSCT, at diagnosis of cGvHD, at 1 year post-BMT and 6 monthly for 2 years after the initial diagnosis of cGvHD.

REFERENCES

1 **Williams, KM.** How I treat bronchiolitis obliterans syndrome after hematopoietic stem cell transplantation. *Blood 26 JANUARY 2017 129, 448-455*

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