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# First report of post-transplant autoimmune hyperlipidaemia and treatment with rituximab

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## INTRODUCTION

Autoimmunity after stem cell transplantation has been reported over decades mainly with autoantibody production, or more rarely, the appearance of autoimmune disease. Most commonly described is autoimmune cytopenia thought to be triggered by transplantation-induced lymphopenia leading to loss of self-tolerance and subsequent proliferation of autoreactive T-cells.[1]

Glycosylphosphatidylinositol-anchored high-density lipoprotein binding protein 1 (GPIHBP1) is a protein which plays a critical role in the lipolytic processing of triglycerides.[2]

## AIM

Here, we present the first reported case of positive autoantibody against GPIHPB1 in a patient who had undergone a T-replete reduced intensity allograft for acute myeloid leukaemia (AML), resulting in significant hypertriglyceridaemia (>50mmol/L) and resolving only with rituximab therapy.

## CASE HISTORY

A 50-year old gentleman with relapsed AML in CR2 underwent an ABO compatible FluCy T-replete allogeneic stem cell transplant in January 2018. In April 2018, biopsy confirmed grade 1 acute gut GvHD; ANA + 1/640; T-cell receptor analysis showed a clonal population; whole blood donor chimerism was 92% (CD3 82%; CD15 99%).

In July 2018, weaning of ciclosporin was started following resolution of symptoms. In August 2018, his haemoglobin fell to 77g/L with positive DAT (IgG+++ C3d+++), raised lactate dehydrogenase and reticulocytosis. He was diagnosed with autoimmune haemolytic anaemia (AIHA) and commenced on high dose prednisolone.

Concurrently it was noted that his blood and bone marrow were extremely lipaemic (Fig. 1) with triglycerides >50mmol/l (NR: 0-5), total cholesterol 8.7mmol/l (NR: 0-5); HDL 0.4 mmol/l (NR: 0.9-1.5). He had no personal or family history of diabetes or hyperlipidaemia; BMI 29.7 kg/m2 and consumed no alcohol. Atorvastatin and fenofibrate were commenced.

After one month of high dose prednisolone his AIHA showed no significant response hence Rituximab (375mg/m$^2$ weekly x4) was started and he was admitted for intravenous insulin/dextrose for persistently elevated triglycerides. His ciclosporin was stopped, in case it was a contributing factor.

Given two autoimmune phenomena post-transplant (AIHA and GvHD), it was postulated that his marked hypertriglyceridaemia was also autoimmune in nature. Samples were sent to a reference laboratory for analysis by ELISA for autoantibodies to GPIHBP1 and lipoprotein lipase (LPL) quantification.

Fig. 1 Visibly lipaemic bone marrow aspirate from our patient

## RESULTS

Autoantibodies were detected at a level of level of 2442u/ml with a low LPL level of 6.7ng/ml (NR: 50-77ng/ml). Following Rituximab therapy, his triglycerides normalised, his reticulocytosis disappeared and his haemoglobin improved. Repeat autoantibodies were 1975U/ml; LPL level had increased to 14.1ng/ml.

## CONCLUSIONS

GPIHBP1 binds LPL on the capillary endothelium and transports it to the site of action within the capillary lumen. LPL is important for intravascular hydrolysis of triglycerides. Autoantibodies against GPIHBP1 have been described previously as a cause of severe hypertriglyceridaemia in patients with known autoimmune conditions, notably lupus and Sjogren's syndrome.[2]

Our case is the first reported case of such an autoimmune phenomenon post-allograft. Further work is required to elucidate the frequency of such autoimmune phenomenon in the transplant population.

## REFERENCES

1. **Holbro A, Abinun M, Daikeler T. Management of autoimmune diseases after haematopoietic stem cell transplantation. Br J Haematol. 2012;157:281–290.**
2. **X Hu et al. GPIHBP1 autoantibodies in a patient with unexplained chylomicronemia. J Clin Lipidol. 2017 Jul-Aug; 11(4): 964–971.**

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