

Measuring blood fats for a ‘liquid biopsy’ in fatty liver disease

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INTRODUCTION

Fatty liver disease (or ‘NAFLD’) is the most common liver disease in children. In some cases it can cause scarring (fibrosis) or inflammation of the liver (non-alcoholic steatohepatitis, or ‘NASH’). Currently, a liver biopsy is needed to diagnosis scarring or inflammation but it would be better to have a blood test that could give the same information: a ‘liquid biopsy’.

Children with fatty liver have higher fats in their blood but normal blood tests just measure the total amount of fat. Our team can do a special test (called ‘lipidomics’) that measures the amounts of all the different kinds of fats in the blood.

AIM

To test whether the levels of specific fats in the blood can be used to diagnose inflammation or scarring in children with fatty liver disease.

METHOD

- We used blood samples from children who had previously had a liver biopsy (for clinical reasons) that showed fatty liver.
- We measured the levels of nearly 300 different fats in their blood.
- The levels of these fats were compared to the results of their biopsies to see if there was a relationship between them.
- We used some statistical tests to make sure our results weren’t interfered by other things, like the age of the child, or whether they were a boy or girl.

FUNDING

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RESULTS

67 children were included in the research. They were on average 10 and a half years old.

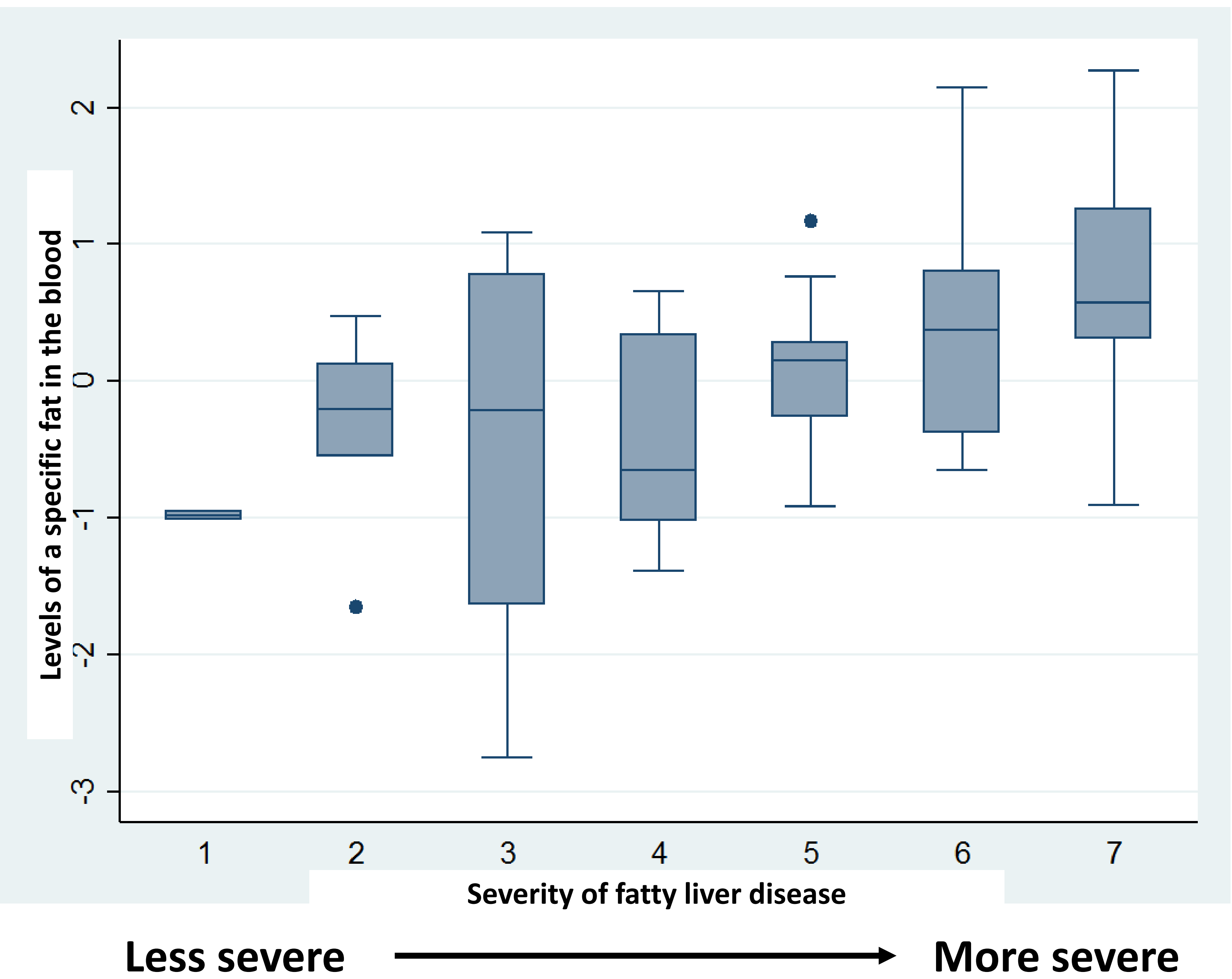
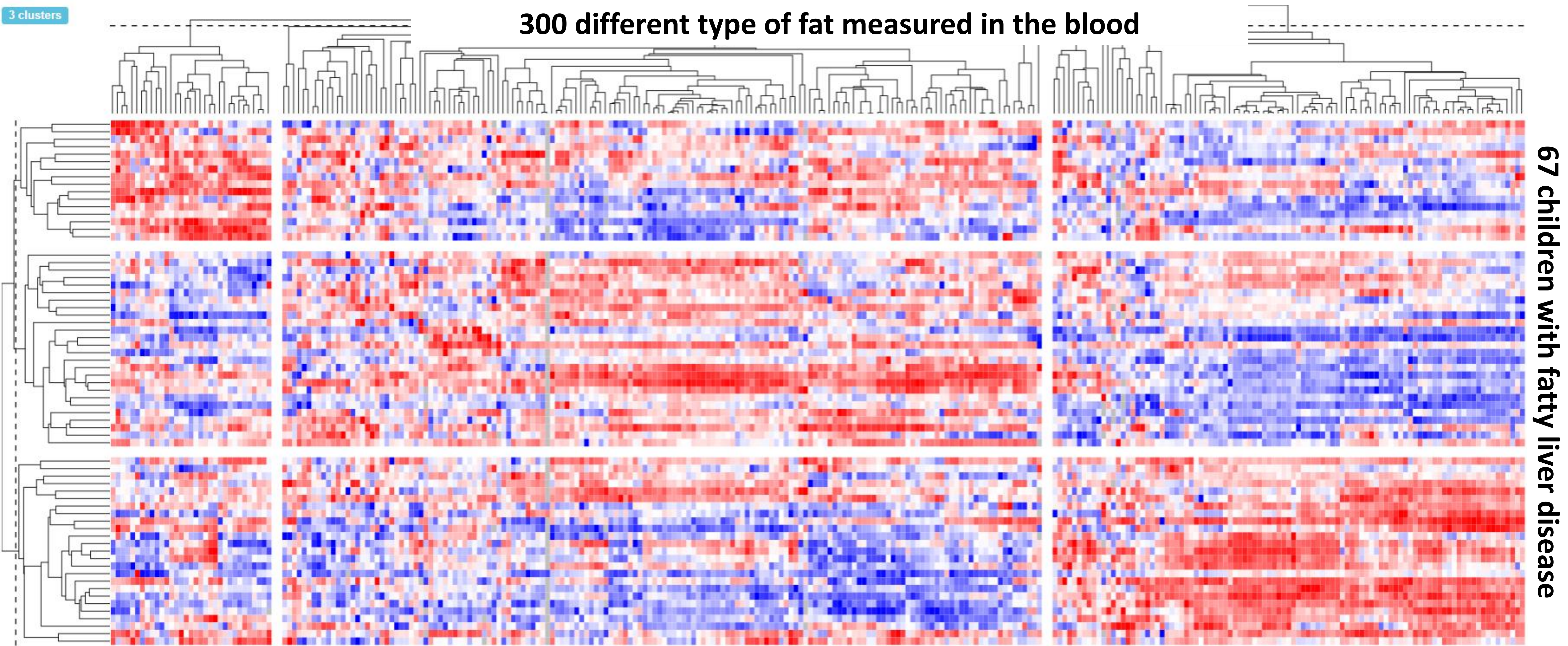
Two-thirds (66%) had inflammation (NASH).

One in ten (10%) had significant scarring (fibrosis).

We found that several different fats could be used to show inflammation and scarring.

‘Heat-map’ of blood fats

This colourful graph shows the levels of all the different fats we measured (in columns) for each child (rows). Red means a higher level of that fat and blue means a lower level of that fat. The grouping of similar colours together shows that there are consistent patterns of changes in blood fats.



Levels of one fat and severity of liver disease

This graph shows the levels of one specific fat compared against the severity of fatty liver disease.

Children with more severe liver disease had higher levels of this fat.

There seems to be a trend all the way through severity of liver disease.

We found similar results for about 10 different fats.

CONCLUSIONS

Measuring the levels of individual types of fat in the blood might be a way of doing a ‘liquid biopsy’ for children with fatty liver disease.

It also tells us interesting things about how the body processes fats when affected by fatty liver.

This was only a small group of children from one hospital. We need to repeat this with a larger group of children and compare it to children without any liver disease.

THANKS

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