

THE ROLE OF MAGNETIC RESONANCE IMAGING OF LEŚNIEWSKI-CROHN'S DISEASE *EX VIVO*

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Introduction

One of the inflammatory bowel diseases is Leśniowski-Crohn's disease. In many cases, it is chronic, i.e. recurrent. The range of diagnostic tools for inflammatory bowel disease is well developed. In the last two decades, the title of the "golden tool" in gastroenterology has been awarded to Magnetic Resonance Imaging (MRI), which is quite a sensitive and precise tool in the diagnosis of all intestinal and parenteral lesions. The challenge may be the ex vivo technique, the subject of which is not the entire patient, but the tissue fragments obtained as a result of a biopsy. Ex vivo magnetic resonance imaging consists in determining the relaxation times of longitudinal magnetization T_1 and transverse magnetization T_2 of the tested objects and on their basis, the analysis of selected fragments and the inclusion of any conclusions in the overall diagnostic evaluation of the case.



Aim:

measurement of fragments of inflammatory lesions of the large intestine by magnetic resonance imaging;

analysis of the obtained results;

determination of the role of ex vivo magnetic resonance imaging of biological materials in the diagnosis of inflammatory bowel diseases.

Materials and methods



Samples of fragments of inflammatory lesions of the large intestine of patients hospitalized at the Clinical Hospital No. 2 in Rzeszów were used.



The diagnostic tool used in the measurements was the GE HEALTHCARE Optima MR360 magnetic resonance imaging with 1.5 Tesla field induction.



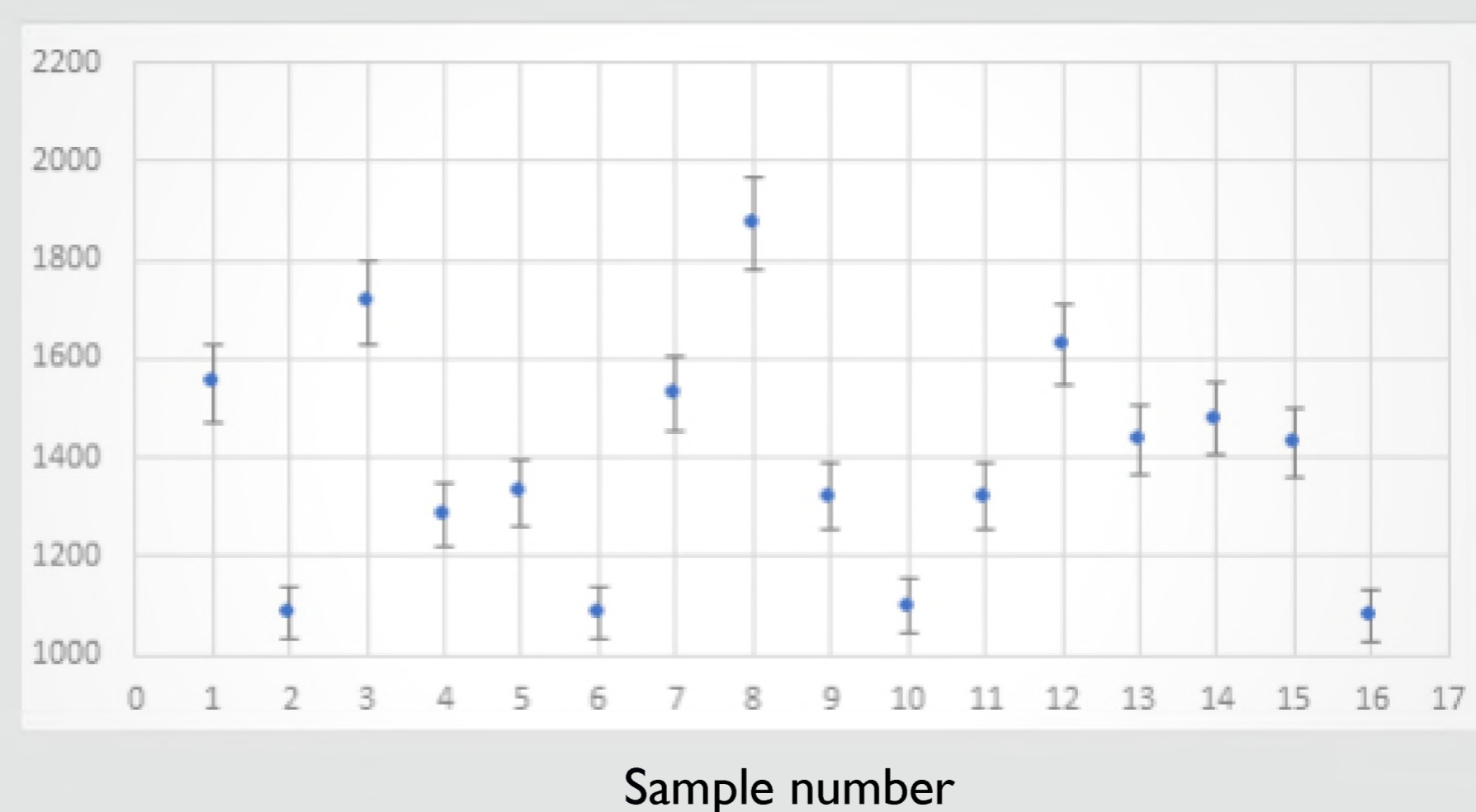
The analysis was carried out on the basis of the T_1 and T_2 relaxation times of all (16) samples using the Fast Spin Echo (FSE) sequence.

Results

Sample number	Longitudinal magnetization relaxation time T_1		Transverse magnetization relaxation time T_2	
	Value [ms]	Uncertainty [ms]	Value [ms]	Uncertainty [ms]
1	1552	± 78	79	± 4
2	1087	± 54	78	± 4
3	1714	± 86	78	± 4
4	1286	± 64	78	± 4
5	1330	± 67	83	± 4
6	1086	± 54	80	± 4
7	1528	± 76	87	± 4
8	1872	± 94	82	± 4
9	1321	± 66	79	± 4
10	1100	± 55	85	± 4
11	1321	± 66	79	± 4
12	1627	± 81	83	± 4
13	1437	± 72	85	± 4
14	1480	± 74	86	± 4
15	1430	± 72	76	± 4
16	1080	± 54	78	± 4

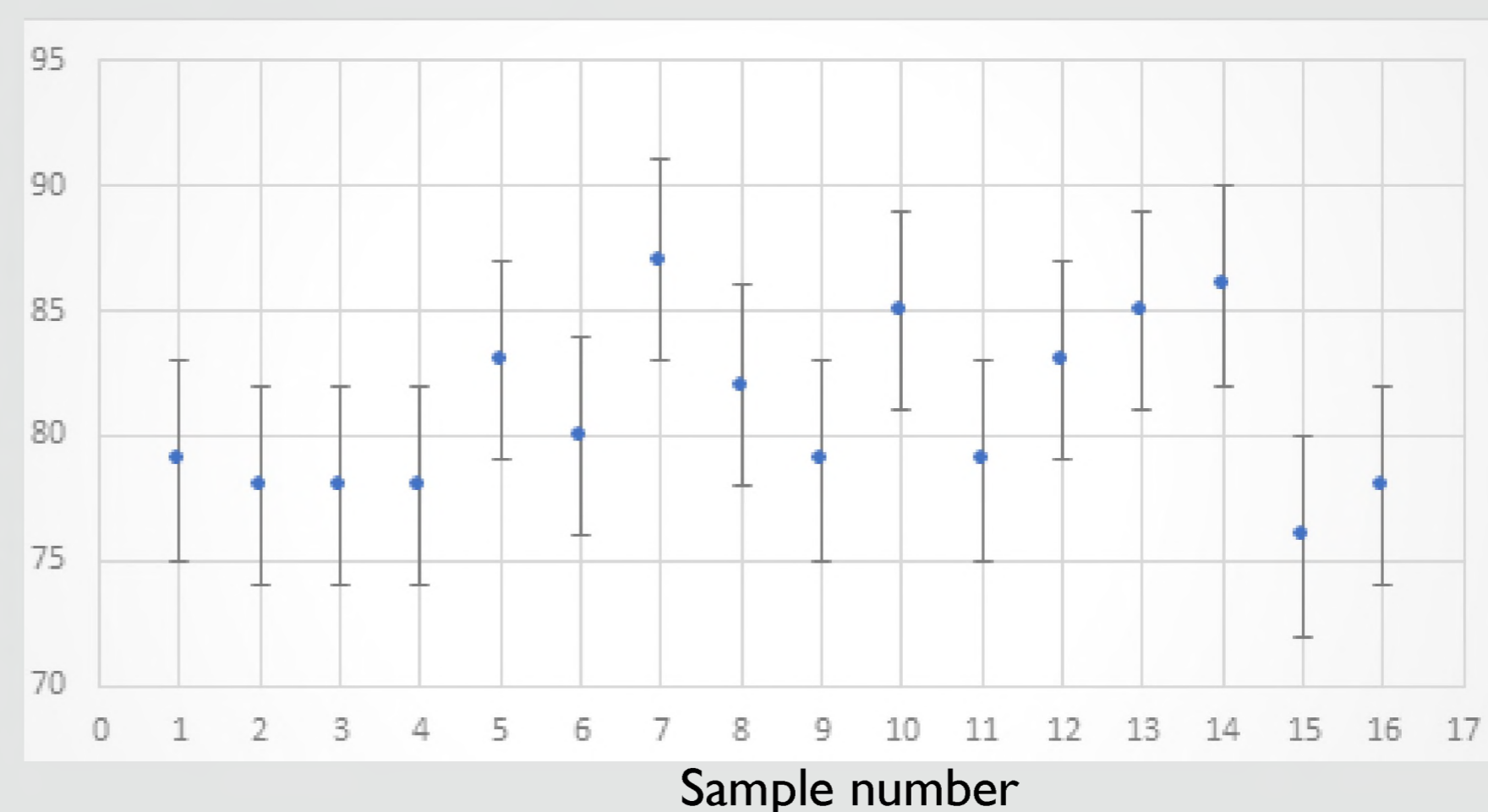
T_1 and T_2 relaxation times of all intestinal lesion fragment samples

Longitudinal relaxation time T_1 of samples of intestinal lesions



Longitudinal relaxation time T_1 of samples of intestinal lesions with uncertainty

T_2 transverse relaxation time of samples of intestinal lesions



T_2 transverse relaxation time of intestinal lesion samples with uncertainty

Both times showed a significant difference between diseased and healthy tissue.

Conclusions

Non-invasive and preserving the measurement parameters, nuclear magnetic resonance has proved to be an invaluable method in the characterization of samples obtained after surgery from patients suffering from Crohn's disease.

The chronicity of this disease causes deep life discomfort for patients, therefore the use of a non-invasive method such as nuclear magnetic resonance is a highly innovative method.