

Pancreatic atrophy in patients with autoimmune pancreatitis

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Introduction

Autoimmune pancreatitis (AIP) is an inflammation of the pancreas which was first described in 1961 but received its current name in 1995. Since it was detected there have been several different diagnostic criteria for AIP, the most recent being the International Consensus Diagnostic Criteria (ICDC) for AIP which were proposed in 2011.

The first-line treatment for AIP typically consists of a steroid treatment; a response to steroid treatment also forms part of the diagnostic criteria for AIP.

Pancreatic atrophy has been observed in several patients with AIP and it has been discussed whether the development of atrophy is aggravated by the treatment with steroids.

Another disease which has been associated with AIP is diabetes mellitus (DM), the prevalence ranging from 12%-83.3%.

Although AIP can be seen as a type of chronic pancreatitis (CP) and patients with AIP also can develop signs of CP, there have only been very few studies that have compared the course of the two diseases with each other.

Aim of our study was to compare these two groups with each other in regard to the rate at which these patients developed pancreatic atrophy and DM.

Materials and Methods

For this study we collected the data of 105 patients who had come to the Gastrocentrum of the Karolinska University Hospital for AIP and CP and who in the course of time had developed an atrophy of the pancreas. Two patients were excluded because they lacked follow-up.

The imaging which best coincided with the patients time of diagnosis was determined as month zero and all follow-up imaging evaluated to determine when the patient developed an atrophy, classified as first or second degree. Furthermore we determined if and when the patient had developed DM and looked at the measures of fecal elastase 1 (FE-1) as parameter for the exocrine function.

Results

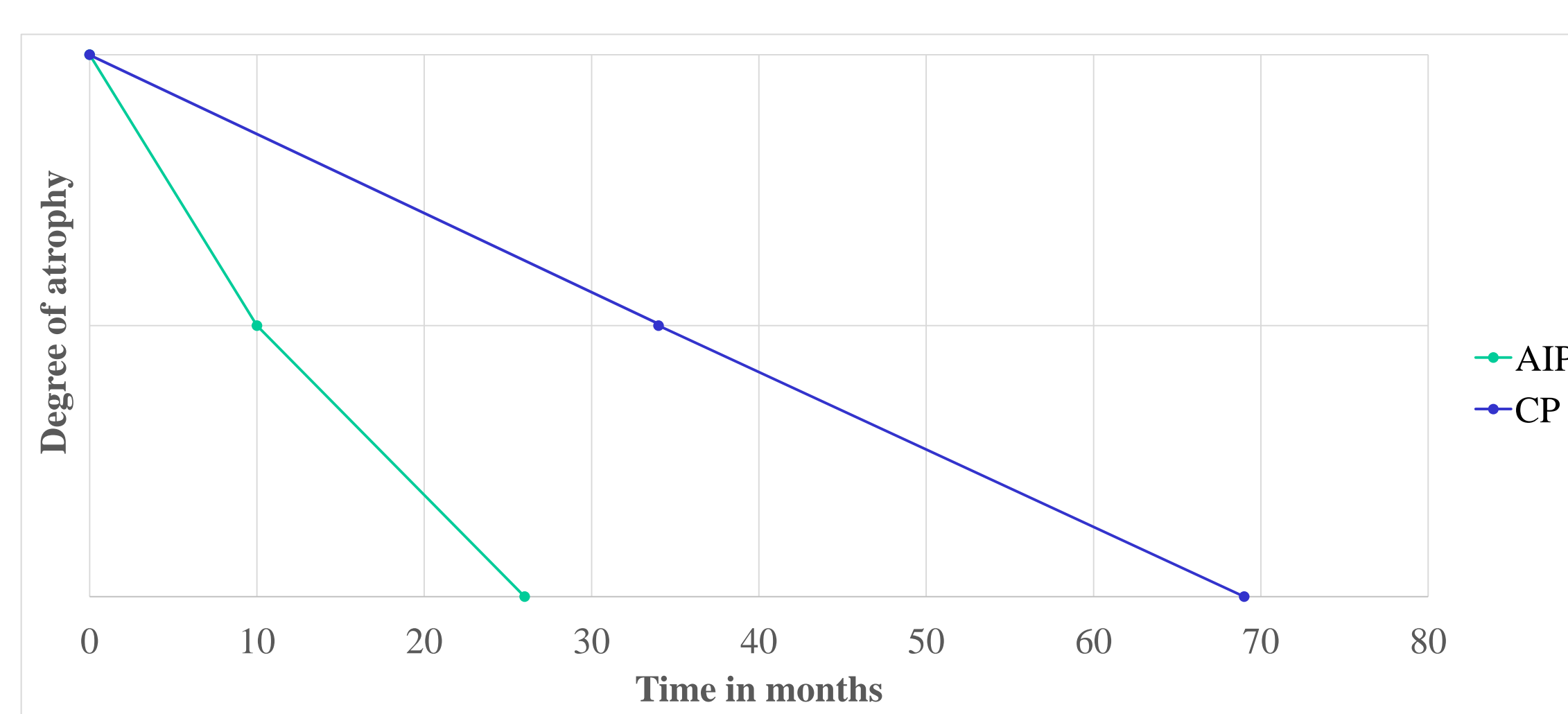
	Chronic pancreatitis	Autoimmune pancreatitis	p
N	50	53	
Gender			
Female	27 (50.9%)	23 (46.0%)	0.61
Male	26 (49.1%)	27 (54.0%)	
Age (years)	54.64±17.67	57.26±20.33	0.47
Smoking			
No	19 (35.8%)	28(63.5%)	
Former	15(28.4%)	13(29.5%)	0.002
Present	19 (35.8%)	3(7.0%)	
Alcohol			
No	3 (6.0%)	2 (5.1%)	
Former	17(34.0%)	14 (35.9%)	0.98
Present	30 (60.0%)	23(59.0%)	
Snus			
No	32 (82.1%)	22 (84.6%)	0.79
Present	7 (17.9%)	4 (15.4%)	

Demographic data of the 103 patients included

Age and gender were equally distributed between the groups. This also applied to the consumption of alcohol and snus. However, there were significantly more present and/or former smokers in the groups of patients with CP whereas the majority of patients with AIP had never smoked.

Results

Patients with AIP developed pancreatic atrophy significantly faster than patients with CP



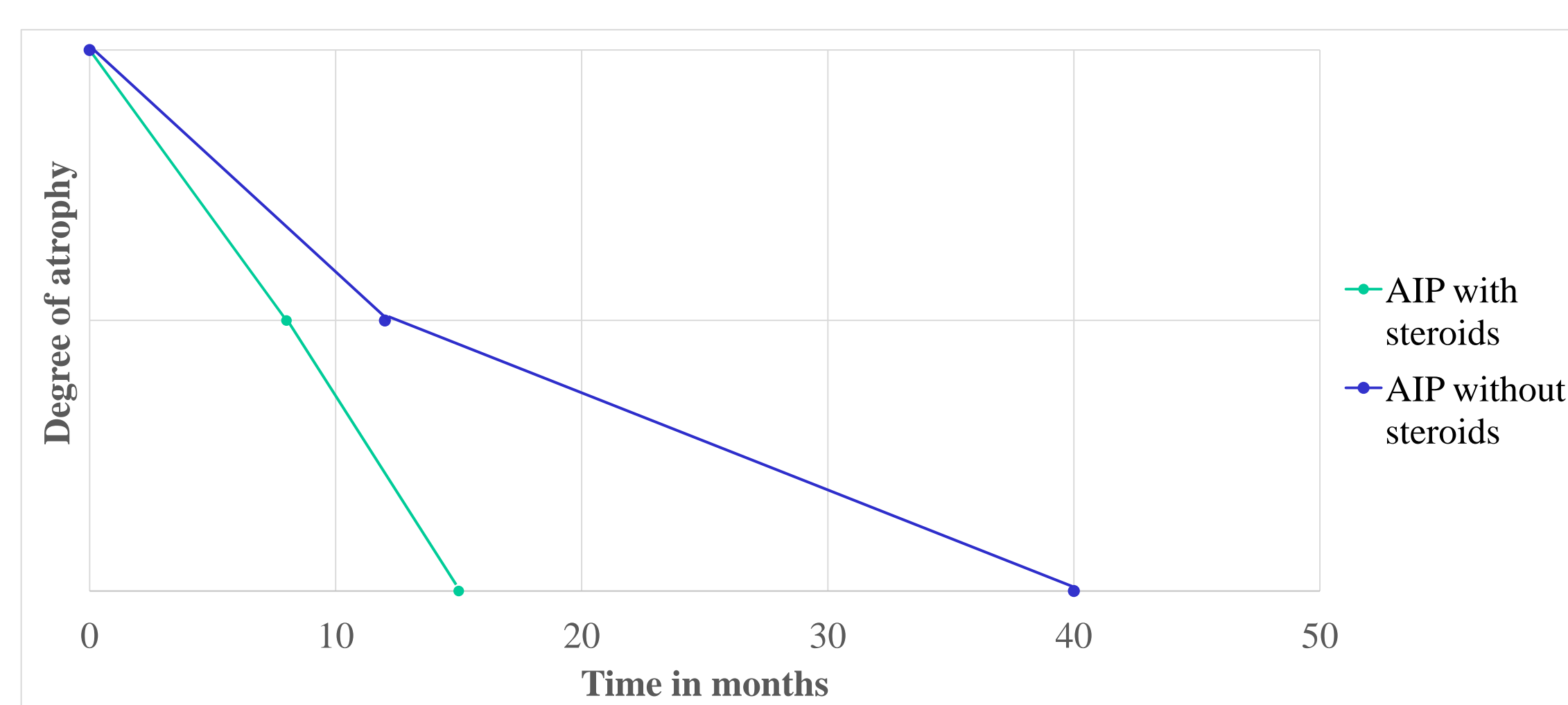
	Chronic pancreatitis	Autoimmune pancreatitis	P-value
Time to atrophy 1st degree	33.86 ± 30.95	10.24 ± 7.70	0.000
Time to atrophy 2nd degree	69.30 ± 52.76	26.00 ± 22.29	0.0094

The mean duration to atrophy 1st degree differed significantly with 33.86±30.95 months in patients with CP but only 10.24 ± 7.70 months in patients with AIP. Also the mean duration to atrophy 2nd degree was significantly longer in patients with CP with 69.30 ± 52.76 months compared to 26.00 ± 22.29 months.

However, it should be noted that whereas a majority of the patients with AIP did not have a pancreatic atrophy at the time of diagnosis, only 34 % of the patients with CP had a normal pancreatic volume at this moment. The majority of the patients with CP (56,7%) had an atrophy of 1st degree at the time of diagnosis and 10% already had an atrophy of 2nd degree.

	Chronic pancreatitis	Autoimmune pancreatitis	p
Atrophy at the time of diagnosis			
No atrophy	17 (34.0%)	44 (91.7%)	
1st degree	28 (56.7%)	4 (8.3%)	0.00
2nd degree	5 (10.0%)	0(0.0%)	

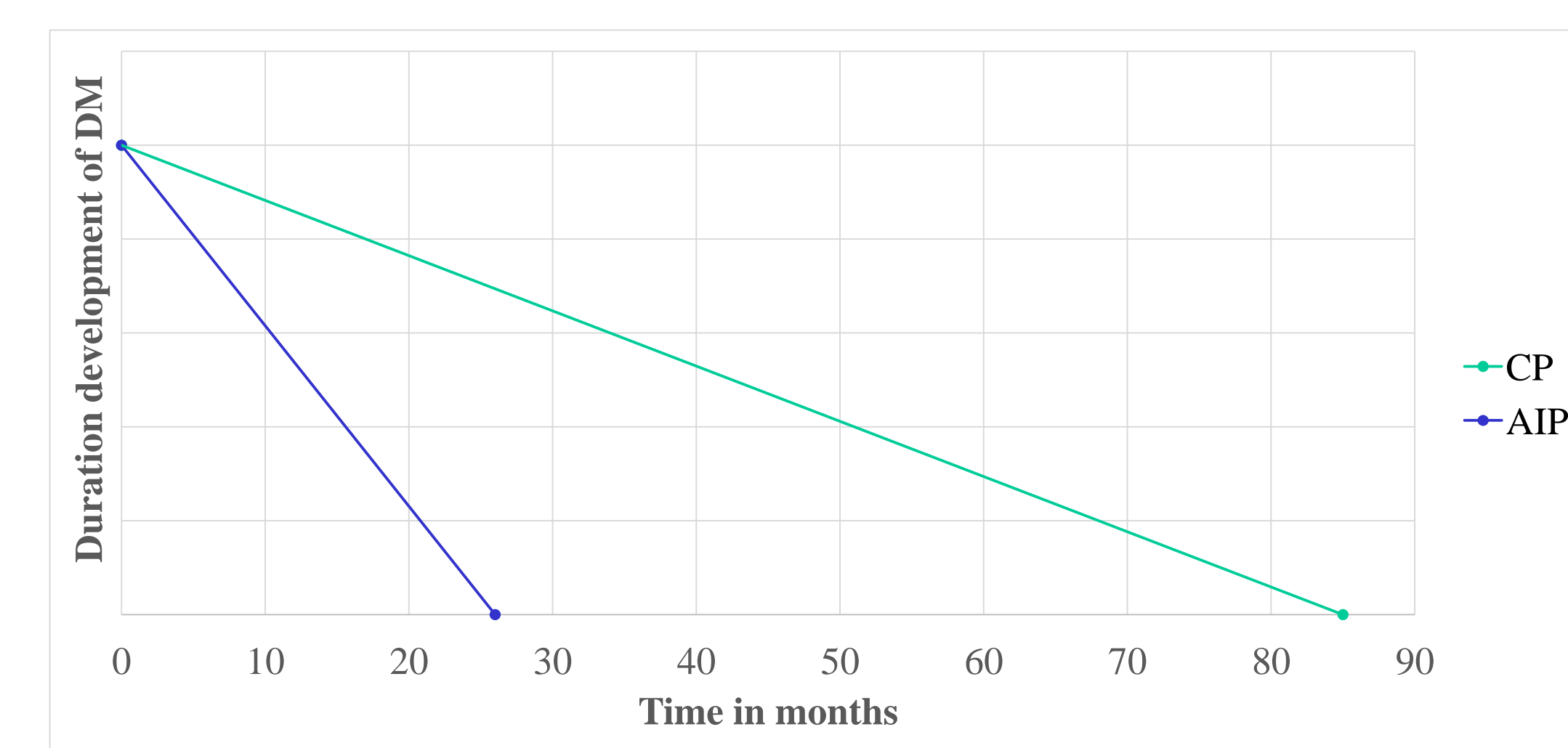
Steroid treatment aggravated the development of atrophy in patients with AIP



	AIP with steroids	AIP without steroids	P-value
Time to atrophy 1st degree	8.35 ± 5.61	12.33 ± 9.23	0.11
Time to atrophy 2nd degree	15.25 ± 12.74	40.33 ± 25.16	0.03

Patients with AIP who received treatment with steroids developed an atrophy of 1st degree equally quick as patients who didn't receive steroid treatment. However, when receiving steroid treatment, patients with AIP developed an atrophy of 2nd degree significantly faster than patients with AIP who did not receive steroid treatment.

Patients with AIP also developed DM significantly faster than patients with CP



	Chronic pancreatitis	Autoimmune pancreatitis	P-value
Time to diagnosis of DM	85.00±53.56 (n = 5)	25.70±30.59 (n = 10)	0.016

The majority of patients with CP and AIP did not have a diabetes mellitus (DM) at the time of diagnosis and there was also no significant difference between the two groups regarding the prevalence of DM, with 34% (CP) and 38% (AIP) of the patients having or developing DM. However, a significantly quicker development of DM was seen in patients with AIP with a mean time of 25.70 ± 30.59 months compared to 85.00 ± 53.56 months in patients with CP.

Patients with AIP had significantly lower levels of FE-1 at time of diagnosis than patients with CP

	Chronic pancreatitis	Autoimmune pancreatitis	P-value
Elastasis at diagnosis			
>500	5 (23.8%)	1 (3.6%)	
200-500	7 (33.3%)	4 (14.3%)	0.020
100-200	1 (4.8%)	7 (25.0%)	
0-100	8 (38.1%)	16 (57.1%)	

When comparing the lowest levels of FE-1 between patients with CP and AIP at the time of diagnosis, patients with AIP had significantly lower levels of FE-1 than patients with CP. However, when comparing the levels of FE-1 between these groups in patients with atrophy 1st degree and atrophy 2nd degree, there was no significant difference

Summary and Conclusions

Patients with AIP seem to develop pancreatic atrophy and diabetes mellitus faster than patients with CP.

Furthermore, in patients with AIP, steroid treatment might aggravate the development of pancreatic atrophy.

Although significantly more patients with CP had a pancreatic atrophy at time of diagnosis, patients with AIP had significantly lower levels of FE-1 at this time of point.

Further study is needed to validate these results.