

## Supplementary Material

### **Long delay from symptom onset to first consultation contributes to permanent vision loss in patients with giant cell arteritis: a cohort study**

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## Vasculitis counts

The number of segments categorized as vasculitis for the carotid arteries are shown.

Additionally, we summarized the subclavian and axillary arteries as one segment, resulting in a total vasculitis score of two points per patient.

We only included patients with complete ultrasonographic examinations of the respective segments.

**Supplementary Table S1:** Number of segments categorized as vasculitis of the common, internal, and external carotid arteries on both sides (total of 6 points)

	Without PVL	With PVL	p-value
<b>Number of patients</b>	223	45	-
<b>Median (IQR)</b>	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.9701
Abbreviations: IQR=interquartile range; PVL=permanent vision loss			

**Supplementary Table S2:** Number of segments categorized as vasculitis of the subclavian/axillary segment on both sides (total of 2 points)

	Without PVL	With PVL	p-value
<b>Number of patients</b>	227	44	-
<b>Median (IQR)</b>	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.7951
Abbreviations: IQR=interquartile range; PVL=permanent vision loss			

**Supplementary Table S3:** Characteristics of patients with vision loss during steroid treatment.

Eleven of 87 patients with visual impairment (12.6%) had not shown any ocular manifestations at first consultation but developed visual impairment after treatment had been commenced, of whom six patients developed PVL.

Case	Sex	Partial or complete vision loss in at least one eye	First symptoms	Reason for seeking medical advice	Consultation delay (days)	Treatment delay (days)	Starting GC dose (mg)	Timepoint of permanent vision loss in relation to first consultation	GC dose at the time of vision loss (mg)	Time from treatment initiation to vision loss (days)	Ophthalmologic diagnosis
Patient 44	f	partial	Headache and jaw claudication	Headache and jaw claudication	28	2	60	After first consultation	60	3	CVI
Patient 45	m	partial	Headache	Headache, weight loss	0	33	60	After first consultation	10	141	AION right eye
Patient 46	f	complete	Jaw claudication, headache, weight loss	Jaw claudication, headache	2	2	40	After first consultation	5	15	CRAO right eye
Patient 47	m	partial	Neck pain and headache	Neck pain, headache, painful temporal artery and jaw claudication	7	0	50	After first consultation	15	37	CRAO left eye
Patient 48	m	partial	Fever, deterioration of the patient's general condition	Fever, deterioration of the patient's general condition	97	30	60	After first consultation	15	75	CRAO right eye
Patient 49	f	partial	Jaw claudication	Jaw claudication	2	0	40	After first consultation	30	44	AION left eye, abducens palsy right eye
Abbreviations: AION=anterior ischemic optic neuropathy; CRAO=central retinal artery occlusion; f=female; CVI=cerebrovascular insult; GC=glucocorticoid; GP=general practitioner; m=male.											

**Supplementary Table S4:** Characteristics of patients with vision loss before steroid treatment initiation.

Case	Sex	Partial or complete vision loss in at least one eye	First GCA-associated symptoms	Reason for seeking medical advice	Consultation delay (days)	Treatment delay (days)	Place of first consultation	Timepoint of permanent vision loss	Ophthalmologic diagnosis
Case 1	f	partial	Vision loss right eye	Vision loss right eye	1	0	Emergency department	Before first consultation	AION right eye
Case 2	f	complete	Vision loss left eye	Vision loss left eye	1	0	Eye clinic	Before first consultation	AION left eye
Case 3	f	complete	Vision loss right eye	Vision loss right eye	3	0	Eye clinic	Before first consultation	CRAO right eye
Case 4	m	partial	Visual field loss left eye	Visual field loss left eye	1	0	Eye clinic	Before first consultation	AION left eye
Case 5	m	partial	Vision loss left eye	Vision loss left eye	2	0	GP	Before first consultation	AION left eye
Case 6	m	partial	Vision loss left eye	Vision loss left eye	2	0	GP	Before first consultation	AION left eye
Case 7	f	partial	Visual field loss left eye	Visual field loss left	1	1	Other	Before first consultation	AION left eye
Case 8	f	partial	Vision loss and blurred vision on both sides	Vision loss and blurred vision on both sides	2	2	Private ophthalmology practice	Before first consultation	AION on both sides
Case 9	m	partial	Vision loss left eye	Vision loss left eye	5	1	Private ophthalmology practice	Before first consultation	CRAO left eye
Case 10	m	partial	Vision loss left eye	Vision loss left eye	3	11	Private ophthalmology practice	Before first consultation	AION left eye
Case 11	m	partial	Visual field loss left eye	Visual field loss left eye	3	0	Private ophthalmology practice	Before steroid therapy	AION left eye
Case 12	m	partial	Visual field loss on both sides	Visual field loss on both sides	15	0	Private ophthalmology practice	Before first consultation	PION on both sides
Case 13	f	partial	Visual field loss on both sides, painful temporal artery, jaw claudication	Visual field loss on both sides, painful temporal artery, jaw claudication	1	0	Eye clinic	Before first consultation	AION on both sides
Case 14	m	partial	Visual field loss, headache, scalp tenderness, jaw claudication, weight loss and night sweats	Visual field loss, headache, scalp tenderness, jaw claudication, weight loss and night sweats	NA	NA	Eye clinic	Before first consultation	AION on both sides
Case 15	f	complete	Vision loss left, headache, jaw claudication	Vision loss left, headache, jaw claudication	NA	NA	GP	Before first consultation	AION left eye
Case 16	f	complete	Vision loss right eye, blurred vision left eye, jaw pain	Vision loss right eye, blurred vision left eye, jaw pain	3	0	GP	Before first consultation	AION on both sides
Case 17	f	complete	Vision loss left eye, headache	Vision loss left eye, headache	2	0	Private ophthalmology practice	Before first consultation	NA
Case 18	m	partial	Vision loss right eye, followed by jaw claudication	Vision loss right eye and jaw claudication	14	0	Private ophthalmology practice	Before first consultation	AION right eye
Case 19	f	partial	Visual field loss right eye, headache	Visual field loss right eye and headache	3	0	Private ophthalmology practice	Before first consultation	AION right eye
Case 20	f	partial	Headache	Vision loss right eye	31	0	Emergency department	Before first consultation	AION right eye
Case 21	f	complete	Neck pain and headache	Vision loss left eye	31	0	Emergency department	Before first consultation	CRAO left eye
Case 22	f	complete	Headache	Vision loss right eye	19	1	Eye clinic	Before first consultation	AION right eye
Case 23	m	partial	Headache	Vision loss left eye	6	0	Eye clinic	Before first consultation	AION left eye
Case 24	f	partial	Headache	Visual field loss right eye	22	0	Eye clinic	Before first consultation	AION right eye

Case	Sex	Partial or complete vision loss in at least one eye	First GCA-associated symptoms	Reason for seeking medical advice	Consultation delay (days)	Treatment delay (days)	Place of first consultation	Timepoint of permanent vision loss	Ophthalmologic diagnosis
Case 25	m	complete	Headache, jaw claudication and scalp tenderness	Vision loss right eye, visual field loss left eye	9	0	Eye clinic	Before first consultation	AION on both sides
Case 26	m	partial	Jaw claudication	Visual field loss left eye	13	1	Eye clinic	Before first consultation	AION left eye
Case 27	m	complete	Jaw claudication followed by hip pain and headache	Vision loss and blurred vision on both sides	23	0	Eye clinic	Before first consultation	AION on both sides
Case 28	f	partial	Neck pain and headache	Blurred vision left eye	59	1	Eye clinic	Before first consultation	AION left eye
Case 29	M	partial	Neck pain followed by jaw claudication and headache	Visual field loss left eye	15	0	Eye clinic	Before first consultation	AION left eye
Case 30	F	partial	Night sweats, weight loss	Blurred vision right eye	14	0	Eye clinic	Before first consultation	AION right eye
Case 31	M	partial	Shoulder and neck pain followed by jaw claudication and scalp tenderness	Visual field loss on both sides	92	0	Eye clinic	Before first consultation	AION on both sides
Case 32	M	partial	Jaw claudication, deterioration of the patient's general condition, weight loss	Visual field loss	30	1	GP	Before steroid therapy	AION right eye
Case 33	F	complete	Neck pain, jaw claudication	Vision loss left eye	25	0	GP	Before first consultation	AION left eye
Case 34	F	complete	Headache, weight loss	Vision loss on both sides	416	0	Private ophthalmology practice	Before first consultation	CRAO left eye, AION right eye
Case 35	F	partial	Neck pain and headache	Visual field loss left eye	21	1	Private ophthalmology practice	Before first consultation	CRAO left eye
Case 36	F	partial	Night sweats	Blurred vision left eye	196	7	Private ophthalmology practice	Before first consultation	AION left eye
Case 37	F	complete	Scalp tenderness, jaw claudication, pain in the temporal artery	Vision loss left eye	19	0	Private ophthalmology practice	Before first consultation	AION right eye
Case 38	f	partial	Shoulder and neck pain	Blurred vision left eye	21	3	Private ophthalmology practice	Before first consultation	AION left eye
Case 39	m	partial	Amaurosis fugax right eye	Amaurosis fugax right eye	0	49	Different hospital	After first consultation	AION right eye
Case 40	f	partial	Headache, jaw claudication	Headache, jaw claudication	18	10	Different hospital	After first consultation	AION right eye
Case 41	m	complete	Headache	Headache, deterioration of the patient's general condition	21	11	GP	After first consultation	AION left eye
Case 42	f	complete	Headache and jaw claudication	Headache, jaw claudication, fever	10	3	GP	After first consultation	AION right eye
Case 43	m	partial	Headache, fever, weight loss	Headache, fever, weight loss	35	11	GP	After first consultation	CRAO right eye
Consultation delay=time from GCA symptom onset to first consultation; treatment delay=time from first consultation to treatment initiation. Abbreviations: AION=anterior ischemic optic neuropathy; CRAO=central retinal artery occlusion; f=female; GP=general practitioner; m=male; PION=posterior ischemic optic neuropathy.									

### Supplementary case descriptions

Five of 43 patients who suffered from vision loss before steroid initiation were shown to have sought medical advice in advance, when visual symptoms were not yet present. These five cases illustrate the difficulty in diagnosing giant cell arteritis (GCA), which was not recognized in these cases until after the onset of irreversible visual disturbances.

#### *Case 39 (Table 3)*

A patient with a previous history of polymyalgia rheumatica had suffered from a single episode of amaurosis fugax in the right eye, whereupon the patient presented at the same day as symptom onset. Extensive examinations including cerebrovascular imaging were performed and excluded intracranial hemorrhage, stroke, or tumor. An ultrasonography examination showed no evidence of GCA. Due to inconclusive results, no steroid treatment was initiated. Weeks later, the patient self-referred and reported a two-week history of progressively decreasing vision in the right eye and concomitant weight loss. At presentation, the patient suffered from visual field loss and fundoscopy revealed optic disc edema. Ultrasonography showed new vasculitic changes in the temporal artery on both sides.

#### *Case 40 (Table 3)*

A patient presented with severe new-onset headache and jaw pain. Cerebral imaging was not conducted; however, it was not possible to determine from the medical records which examinations were performed. Steroid treatment, however, was not initiated. Nine days later, the patient suffered from sudden vision loss and presented directly at the emergency department of our clinic. Bedside ultrasonography showed positive compression signs on both sides of the frontal temporal artery and the ophthalmologic examination revealed optic disc edema and temporal visual field loss. High-dose glucocorticoid treatment was promptly initiated, however, visual field loss remained irreversible.

#### *Case 41 (Table 3)*

A patient was referred to a hospital by his GP due to deterioration of the patient's health and new-onset headache. Laboratory results revealed an elevated C-reactive protein and leukocytosis. A thoracic CT scan revealed pneumonia, which was treated with antibiotics. In the further course, the patient developed sudden visual disturbances in his left eye up to complete vision loss. Steroid treatment was started, and the patient was referred to our clinic for further diagnostics.

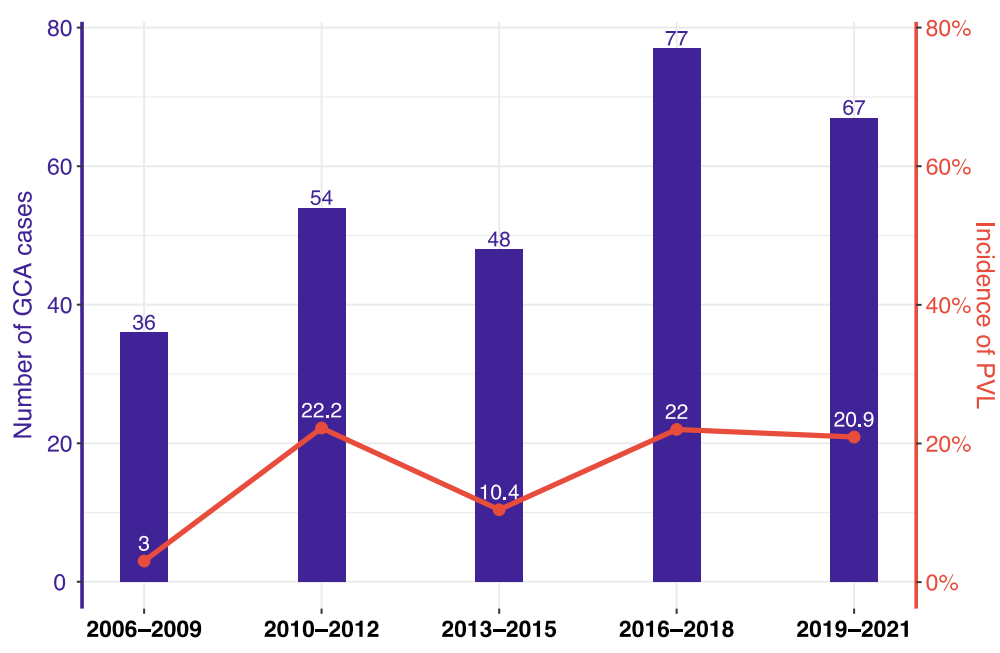
*Case 42 (Table 3)*

A patient first suffered from jaw claudication and intermittent headache. During that time, the patient consulted a dentist due to persistent jaw pain. Since the dental examination remained inconclusive, no therapy was initiated. However, on the same day, the patient consulted her general practitioner (GP) due to headache and new onset fever. Additionally, the patient reported abdominal pain which prompted her GP to refer the patient to the emergency department. Due to the unspecific nature of the symptoms with predominant constipation, an abdominal infection was excluded and empiric antibiotic therapy was initiated on admission. In the further course, the patient developed painful temporal arteries and acute amaurosis on her right eye. An emergency ophthalmological, neurological and rheumatological evaluation was performed and due to suspected anterior ischemic optic neuropathy (AION) and GCA, high-dose intravenous steroid treatment was started immediately. Unfortunately, complete blindness persisted in the right eye.

*Case 43 (Table 3)*

A patient consulted his GP complaining of headache, fatigue, loss of appetite, night sweats as well as weight loss for over a period of one month. His GP initiated an antibiotic therapy which did not improve the patient's symptoms and a thoracic CT scan remained inconclusive. After a couple of days, the patient experienced a sudden episode of transient blurred vision in both eyes and subsequent complete blindness in his right eye. He consulted a private ophthalmologist, who referred him immediately with suspicion of GCA.





**Supplementary Figure S1:**  
Number of patients diagnosed with giant cell arteritis at the University Hospital Basel from December 2006 to May 2021. The line indicates the trend in incidence (%) of permanent vision loss (PVL) over the last 15 years.