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Original Article

# The Profile of Optic Neuritis at RSUP Dr. M. Djamil Padang From January 2022 to June 2024

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ABSTRACT

Introduction: Optic neuritis is an inflammatory condition of the optic nerve characterized by subacute vision loss, visual field defects, and color vision deficiency. It is commonly associated with demyelinating diseases and autoimmune disorders. No epidemiological data are available for Indonesia. This study aimed to examine the profile of optic neuritis patients at RSUP Dr. M. Djamil Padang from January 2022 to June 2024. Methods: A study on 42 patients with optic neuritis at RSUP Dr. M. Djamil Padang from 2022-2024 showed a higher prevalence in females (71.42%) and the 20-39 age group (50%). Unilateral optic neuritis (61.90%) was more common, and typical cases (57.15%) outnumbered atypical cases (42.85%). Discussion: The study revealed that optic neuritis was more common in females and the 20-39 age group. Most cases were unilateral, with typical optic neuritis being more prevalent. Visual acuity improved significantly after treatment, particularly in those receiving intravenous corticosteroids. Imaging showed optic nerve abnormalities in some cases, but most were normal. The study also found common visual field defects, such as central scotoma, and highlighted the role of neuroprotective therapy alongside corticosteroids in improving visual outcomes.Conclusion: This study found that optic neuritis was most common in females and the 20-39 age group. Most patients experienced significant improvement in visual acuity with intravenous corticosteroid therapy. Imaging showed abnormalities in some cases, though most had normal findings, offering valuable insights into diagnosis and treatment.

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## Introduction

Optic neuritis is an inflammatory condition of the optic nerve that causes subacute vision loss, visual field defects color vision impairment, reduced contrast sensitivity, and eye pain, especially during movement.[1-4] Epidemiological studies from the United States and Europe report an annual incidence of 2.2 to 6.4 new cases per 100,000 people, with variations across regions. In Singapore,

the incidence was 0.83 per 100,000 in 2009, while in Spain, it reached 5.36 per 100,000 between 2008 and 2012. However, there is no epidemiological data available for Indonesia. The highest risk factors for optic neuritis include female gender, obesity, smoking, reproductive age, and Caucasian ethnicity.[3,5-8]

The exact cause of optic neuritis is often unknown, but it can be linked to demyelinating diseases such as multiple sclerosis and neuromyelitis optica, as well as autoimmune disorders like sarcoidosis and systemic lupus erythematosus. Diagnosis is based on clinical symptoms and fundus examination, which may show optic disc swelling, although some cases present with a normal optic disc. Imaging tests like Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) are commonly used, with MRI being more sensitive in detecting demyelinating lesions and ruling out other conditions such as space-occupying lesions.[1,2,8]

The management of optic neuritis follows the recommendations of the Optic Neuritis Treatment Trial (ONTT), which suggests intravenous methylprednisolone (IVMP) 250 mg four times daily for three days, followed by oral prednisone (1 mg/kg per day for 11 days) to speed up visual recovery.[8-10]

This study aimed to analyze the profile of optic neuritis patients at RSUP Dr. M. Djamil Padang from January 2022 to June 2024.

## Method

This study used a descriptive research design with a retrospective approach. The data were collected by reviewing the medical records of patients diagnosed with optic neuritis at RSUP Dr. M. Djamil Padang. The study focused on gathering relevant data from January 2022 to June 2024 by examining the available patient records.

The research was conducted at the ophthalmology clinic of RSUP Dr. M. Djamil Padang, where all patients diagnosed with optic neuritis during the study period were treated. The population for this study includes all patients diagnosed with optic neuritis at the clinic between January 2022 and June 2024. From this population, all patients who met the inclusion criteria were selected as the sample for the study.

The inclusion criteria for this study were patients diagnosed with optic neuritis who sought treatment at the ophthalmology clinic of RSUP Dr. M. Djamil Padang during the specified time frame. Patients who did not have complete medical record data were excluded from the study, as their information was insufficient for the analysis.

Data collected from the patient records were analyzed descriptively, focusing on the demographic characteristics, clinical features, and treatment outcomes of patients diagnosed with optic neuritis. The analysis aimed to provide insights into the clinical presentation and management practices for optic neuritis at RSUP Dr. M. Djamil Padang during the study period.

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Table 1. Characeteristic of patients with optic neuritis based on age and gender.

| Characteristic | Number (People) | Percentage (%) |
|---|---|---|
| Age | | |
| <20 years | 12 | 28.57 |
| 20-39 years | 21 | 50.00 |
| 40-59 years | 9 | 21.42 |
| ≥ 60 years | 0 | 0 |
| Total | 42 | 100 |
| | | |
| Gender | | |
| Male | 12 | 28.57 |
| Female | 30 | 71.42 |
| Total | 42 | 100 |

In Table 4.1, it can be seen that optic neuritis is most commonly found in females (71.42%) compared to males, resulting in a ratio of 2.5:1 between females and males in this study. Optic neuritis is most commonly found in the 20-39 years age group, with 21 patients (50%).

Table 2. Visual acuity at baseline and after therapy

| Visual acuity onset | Number before therapy | Percentage before therapy | Number after therapy | Percentage after therapy |
|---|---|---|---|---|
| NLP (no light perception) | 0 | 0 | 0 | 0 |
| LP (light perception) | 6 | 10.34 | 1 | 1.72 |
| 1/300 | 6 | 10.34 | 2 | 3.44 |
| 1/60 | 24 | 41.37 | 4 | 6.89 |
| >1/60-20/80 | 18 | 31.03 | 9 | 15.51 |
| 20/60-20/30 | 4 | 6.89 | 16 | 27.58 |
| ≥20/25 | 0 | 0 | 26 | 44.82 |
| Total | 58 | 100 | 58 | 100 |

In Table 4.2, it is shown that the most common visual acuity at the time of diagnosis is 1/60 (41.37%). After treatment, the majority of patients had a visual acuity of ≥20/25 (44.82%).

Table 3. Clinical manifestations of the patients

| Type | Number | Percentage (%) |
|---|---|---|
| **Eye Pain** | | |
| Present | 24 | 41.37 |
| Absent | 34 | 58.63 |
| **Color Vision** | | |
| Normal | 9 | 15.51 |
| Protan | 4 | 6.89 |
| Deutran | 0 | 0 |
| Tritan | 16 | 27.58 |
| N/A | 29 | 50.00 |
| **Laterality** | | |
| Unilateral | 26 | 61.90 |
| Bilateral | 16 | 38.10 |
| **Type of Optic Neuritis** | 24 | 57.15 |
| Typical | 18 | 42.85 |
| Atypical | | |

N/A: The examination could not be performed due to extremely poor visual acuity or uncooperative patients

In Table 4.3, there are 26 cases of unilateral neuritis (61.90%) and 16 cases of bilateral neuritis (38.10%). Eye pain was found in 24 eyes of patients (41.37%). In the color vision examination, the most common condition was tritanopia (27.58%), followed by protanopia (5.17%). In 24 patients (57.14%), typical neuritis was diagnosed, while 18 patients (42.85%) were diagnosed with atypical neuritis.

Table 4. Corticosteroid therapy in patients with optic neuritis

| Corticosteroid therapy | Number | Percentage (%) |
|---|---|---|
| Intravenous | 31 | 73.80 |
| Oral | 11 | 26.20 |
| Total | 42 | 100% |

In Table 4.4, there were 31 patients (73.80%) who received intravenous corticosteroid therapy followed by oral corticosteroids, and 11 patients (26.20%) who received oral corticosteroids without prior intravenous therapy.

Table 5. Examinations in patients with optic neuritis

| Imaging | Number | Percentage (%) |
|---|---|---|
| **Perimetry** | | |
| Normal | 2 | 3.44 |
| Arcuate | 11 | 18.96 |
| Altitudinal | 2 | 3.44 |
| Central | 13 | 22.41 |
| scotoma | 14 | 24.13 |
| General | 16 | 27.58 |
| depressed | 58 | 100 |
| N/A | | |
| Total | | |
| | 6 | 14.28 |
| **MRI / CT Scan Results** | 36 | 85.71 |
| Optic nerve enhancement/thickening | 42 | 100 |
| No abnormalities found | | |
| Total | | |

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In Table 4.5, a variety of perimetric findings were observed, with the most common being central scotoma (22.41%), general depressed (24.13%), and NA (27.58%). In imaging examinations, 6 patients (14.28%) showed optic nerve enhancement or thickening, while 36 patients (85.71%) showed no abnormalities.

## Results and Discussion

A study was conducted on a sample of 42 patients (58 eyes) from January 2022 to June 2024 at RSUP Dr. M. Djamil Padang. The results showed that optic neuritis was more commonly found in females (71.42%), with a female-to-male ratio of 2.5:1. This finding is consistent with previous studies by Braithwaite et al., which also found more female subjects (69.4%), and Yudiasari et al., who reported 65% of subjects with optic neuritis were female. This may be linked to the presence of genes regulating the immune system located on the X chromosome, which may increase the risk of autoimmune diseases.[5,6]

The most common age group affected by optic neuritis was 20-39 years (50%), followed by the <20 years group (28.57%). This aligns with the findings of Braithwaite et al., who observed the highest prevalence in the 31-40 age range (28.2%) and 21-30 years (24.9%), and with Yudiasari et al.'s study, which found 80% of subjects in the 20-51 age range. This is in line with Kondengis et al.'s theory, where the peak incidence of optic neuritis occurs between 15-49 years.[5-7]

Regarding visual acuity, the most common diagnosis at presentation was 1/60 (41.37%), and after treatment, most patients had a visual acuity of ≥20/25 (44.82%). This is similar to the findings by Yudiasari et al., who reported a majority of patients with visual acuity between >1/60-20/80 (36.1%).[5,6]

The study also found that 26 cases were unilateral (61.90%) and 16 were bilateral (38.10%). This is in agreement with Hudzaifah-Nordin et al., who found 82.4% of cases were unilateral, while Yudiasari et al. had a higher proportion of bilateral cases (52.5%). The difference is explained by the underlying etiology, with unilateral optic neuritis mainly caused by demyelination (e.g., MS) and bilateral cases by systemic conditions, such as infections.[6,11]

Regarding eye pain, it was found in 24 eyes (41.37%). Eye pain is a common symptom of typical optic neuritis and may occur before or simultaneously with vision loss. In contrast, 34 eyes (58.62%) did not have eye pain, typical of atypical optic neuritis, which may appear without periorbital pain. This is consistent with the findings of de la Cruz et al., who found 30% of bilateral optic neuritis cases with periorbital pain.[6,9]

In terms of color vision, tritanopia (27.58%) was most commonly observed, which aligns with Simunovic's study, where patients with optic neuritis exhibited reduced blue-yellow color vision (tritanopia) due to lesions on axons from the perifoveal area. In contrast, protanopia (red-green color vision deficiency) originates from the central fovea.[12]

This study found 24 typical cases (57.15%) and 18 atypical cases (42.85%), which is consistent with the typical features of optic neuritis. Typical optic neuritis is more common in women aged 18-49 years, presenting as subacute monocular vision loss. Atypical cases are often bilateral and associated with worse visual acuity, often worse than 20/200.[13-15]

Perimetric findings varied, with the most common being central scotoma (22.41%), general depressed (24.13%), and NA (27.58%). These findings were consistent with those of Yudiasari et al., who also reported diffuse visual field loss (19.8%) and arcuate defects (14.7%). Keltner's study on visual field defects in optic neuritis also found diffuse visual field loss, central scotoma, and arcuate defects to be common.[6,16,17]

Imaging revealed optic nerve enhancement or thickening in 6 patients (14.28%), and 36 patients (85.71%) had no abnormalities. This is similar to findings by Laviers et al., where 60% of optic neuritis cases had normal MRI results. Additionally, Ciapă et al. noted that optic neuritis often serves as an initial presentation of multiple sclerosis (MS) without prior neurological history.[18]

In this study, 31 patients (73.80%) received intravenous corticosteroid therapy followed by oral corticosteroids, and 11 patients (26.20%) received only oral corticosteroids. This is consistent with Yudiasari et al., who found that 55% of subjects received intravenous corticosteroid therapy followed by oral corticosteroids, while 37.5% received no steroid treatment. According to the Optic Neuritis Treatment Trial (ONTT), corticosteroids do not significantly affect long-term visual acuity but help accelerate recovery. Most patients experienced improved visual acuity within two weeks, with the majority achieving full recovery within 4-6 weeks.[6,10,19]

Additionally, neuroprotective therapy was administered alongside corticosteroids, considering its benefits in demyelinating diseases like optic neuritis. Combining intravenous corticosteroids and neuroprotective therapy led to good visual improvements in optic neuritis patients.[6,10,19]

## Conclusion

In conclusion, the study conducted at RSUP Dr. M. Djamil between 2022 and 2024 revealed that optic neuritis was most commonly diagnosed in females, with the highest prevalence observed in the 20-39 age group, representing a significant portion of the patient population. At the onset, the most frequent visual acuity was 1/60, whereas, after treatment, the majority of patients achieved a visual acuity of ≥20/25, indicating significant improvement. Unilateral optic neuritis was the most common form of the condition observed in this study. Furthermore, typical optic neuritis cases were more prevalent compared to atypical cases.

The majority of patients in this study received intravenous corticosteroid therapy, which was administered more frequently than oral corticosteroid treatment. This suggests that intravenous corticosteroids may be preferred in the management of optic neuritis. Imaging tests, including MRI and CT scans, were used to examine the optic nerve, with some patients showing optic nerve abnormalities. However, most of the patients in this study did not exhibit any significant findings on imaging, suggesting that imaging may not always reveal abnormalities in cases of optic neuritis. Overall, the study provides important insights into the clinical presentation, management, and diagnostic approach for optic neuritis at RSUP Dr. M. Djamil.

## Declarations

### Statement on the Use of Artificial Intelligence

Artificial intelligence (AI) was used solely to assist with language editing and improve the clarity of the manuscript. AI was not used for data collection, data analysis, interpretation of results, or scientific decision-making. The author reviewed, edited, and verified the entire manuscript and takes full responsibility for its accuracy and integrity.

### Author Contribution Statement

Atika Syafendra contributed to the conceptualization of the study, development of the methodology, data collection and processing, analysis and interpretation of the results, literature review, preparation of the initial draft, and manuscript review and editing. The author approved the final version of the manuscript for publication.

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### Conflict of Interest.

The author declares no financial, professional, or personal conflicts of interest that could have influenced the research or publication of this article.

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