Typical Optic Neuritis

Optic Neuropathy

Lots of ways to divvy these up…
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Noninflammatory

Lots of ways to divvy these up... this is just one.
Optic Neuropathy

- Inflammatory
- Noninflammatory

Lots of ways to divvy these up…
Optic Neuropathy

Inflammatory
  
  Typical (demyelinating)

  Atypical

Noninflammatory

Lots of ways to divvy these up… this is just one.

Typical Optic Neuritis
Optic Neuropathy

Typical Optic Neuritis

Inflammatory

- Typical (demyelinating)

Noninflammatory

- Atypical
Optic Neuropathy

Typical Optic Neuritis

Inflammatory
- Typical (demyelinating)
- Atypical
  - Infectious
  - Immune

Noninflammatory
Optic Neuropathy

Typical Optic Neuritis

Inflammatory

Typical (demyelinating)

Atypical

Noninflammatory

Infectious

Immune
Typical Optic Neuritis

Optic Neuropathy

Inflammatory
  Typical
    (demyelinating)
  Atypical
    Infectious
    Immune

Noninflammatory
  Ischemic
  Compressive
  Toxic/nutritional
  Congenital/hereditary
  Traumatic
What is far-and-away the most common type of optic neuropathy?

Hint…
What is far-and-away the most common type of optic neuropathy?

*Hint*...It’s not listed on this slide!

*Hint*...
What is far-and-away the most common type of optic neuropathy?  
*Hint...It’s not listed on this slide!  
*Hint...It’s so common, it gets its own ophthalmic subspecialty!  
It's...
What is far-and-away the most common type of optic neuropathy?

Hint...It’s not listed on this slide!

Hint...It’s so common, it gets its own ophthalmic subspecialty!

It’s... **Glaucoma** (don’t forget—glaucoma is an optic neuropathy!)
What exam finding is the sine qua non of unilateral or asymmetric bilateral optic neuropathy?
What exam finding is the sine qua non of unilateral or asymmetric bilateral optic neuropathy? A relative afferent pupillary defect (RAPD)
**Typical Optic Neuritis**

**Optic Neuropathy**

- **Inflammatory**
  - Typical (demyelinating)
  - Atypical
    - Infectious
    - Immune

- **Noninflammatory**
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

---

**What exam finding is the sine qua non of unilateral or asymmetric bilateral optic neuropathy?**

A relative afferent pupillary defect (RAPD)

**What should you do if a presumptive unilateral/asymmetric bilateral ON pt doesn’t have an RAPD?**
What exam finding is the sine qua non of unilateral or asymmetric bilateral optic neuropathy? A relative afferent pupillary defect (RAPD)

What should you do if a presumptive unilateral/asymmetric bilateral ON pt doesn’t have an RAPD? You should question the diagnosis
Optic Neuropathy

- Inflammatory
  - Typical (demyelinating)
  - Atypical
    - Infectious
    - Immune
- Noninflammatory
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

What functional abnormalities are likely to be found in a pt with an optic neuropathy?

- Decreased
- Abnormal
- Impaired
What functional abnormalities are likely to be found in a pt with an optic neuropathy?

--Decreased *central acuity*
--Abnormal *visual fields*
--Impaired *color vision*
Optic Neuropathy

Inflamatory
- Typical (demyelinating)
- Atypical
  - Infectious
  - Immune

Noninflammatory
- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

*Name 3 infectious causes of atypical ON:*
1) 
2) 
3) 

(There are many others, of course)
Optic Neuropathy

Typical Optic Neuritis

Inflammatory
  - Typical (demyelinating)
  - Atypical
    - Infectious
    - Immune

Noninflammatory
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

Name 3 infectious causes of atypical ON:
1) Lues (syphilis)
2) TB
3) Lyme

(There are many others, of course)
**Typical Optic Neuritis**

Optic Neuropathy

- **Inflammatory**
  - Typical (demyelinating)
  - Infectious
  - Immune

- **Noninflammatory**
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

**Name 3 immune-related causes of atypical ON:**
1) 
2) 
3) 

(There are many others, of course)
Name 3 *immune-related* causes of atypical ON:
1) Sarcoid
2) SLE
3) Wegener’s

(There are many others, of course)
Who is the typical ‘typical optic neuropathy’ patient?

- A female age 15 - 45
- About 75% of typical/demyelinating ON pts are female.
Optic Neuropathy

Inflammatory

Typical (demyelinating)

Who is the typical 'typical optic neuropathy' patient?
A female age 15 - 45

Noninflammatory

Ischemic

Traumatic

Infectious

Immune

Congenital/hereditary

Toxic/nutritional
Optic Neuropathy

- Inflammatory
  - Typical (demyelinating)
    - Who is the typical 'typical optic neuropathy' patient?
      - A female age 15 - 45
    - What should you do if a presumptive demyelinating ON pt doesn't fit this profile?
  - Atypical

- Noninflammatory
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic
**Typical Optic Neuritis**

**Optic Neuropathy**

- **Inflammatory**
  - Typical (demyelinating)
  - Atypical

- **Noninflammatory**
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

**Who is the typical ‘typical optic neuropathy’ patient?**
**A female age 15 - 45**

**What should you do if a presumptive demyelinating ON pt doesn’t fit this profile?**
You should question the diagnosis
Typical Optic Neuritis

Optic Neuropathy

- Inflammatory
  - Typical (demyelinating)
- Noninflammatory
  - Ischemic
  - Traumatic
  - Congenital/hereditary
  - Toxic/nutritional
  - Immune
  - Infectious

Who is the typical ‘typical optic neuropathy’ patient?
A female age 15 - 45

What percentage of typical/demyelinating ON pts are female?
About 75%
Who is the typical ‘typical optic neuropathy’ patient?
A female age 15 - 45

What percentage of typical/demyelinating ON pts are female?
About 75%
With what disease is demyelinating optic neuropathy associated?

Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Infectious

Immune

Noninflammatory

Ischemic

Compressive

Toxic/nutritional

Congenital/hereditary

Traumatic
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

- Typical (demyelinating)
- Atypical
  - Infectious
  - Immune

Noninflammatory

- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

With what disease is demyelinating optic neuropathy associated? Multiple sclerosis (MS)
With what disease is demyelinating optic neuropathy associated?
Multiple sclerosis (MS)

Is it always accompanied or followed by MS?
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

- Typical (demyelinating)
- Atypical
  - Infectious
  - Immune

Noninflammatory

- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

With what disease is demyelinating optic neuropathy associated?
Multiple sclerosis (MS)

Is it always accompanied or followed by MS?
No, but the lifetime risk of developing MS is high
What is the pattern of vision loss in typical optic neuritis?

Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.
What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.
**Optic Neuropathy**

**Inflammatory**
- Typical (demyelinating)
- Atypical

**Noninflammatory**
- Infectious
- Immune
- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

---

**Typical Optic Neuritis**

**What is the pattern of vision loss in typical optic neuritis?**

*Bilateral* vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**What percent of typical optic neuritis pts present with bilateral vision loss?**

Less than 1% of adult optic neuritis pts present bilaterally. There is a subpopulation of optic neuritis pts for whom bilateral presentation is somewhat more common. What is that population? Children.
What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

What percent of typical optic neuritis pts present with bilateral vision loss?

Less than 1% of adult optic neuritis pts present bilaterally.
**Typical Optic Neuritis**

**Optic Neuropathy**

- **Inflammatory**
  - Typical (demyelinating)
  - Atypical
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

- **Noninflammatory**

**What is the pattern of vision loss in typical optic neuritis?**

*Bilateral* vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**What percent of typical optic neuritis pts present with bilateral vision loss?**

Less than 1% of adult optic neuritis pts present bilaterally.

**There is a subpopulation of optic neuritis pts for whom bilateral presentation is somewhat more common--what is that population?**
What is the pattern of vision loss in typical optic neuritis?
-Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

What percent of typical optic neuritis pts present with bilateral vision loss?
-Less than 1% of adult optic neuritis pts present bilaterally.

There is a subpopulation of optic neuritis pts for whom bilateral presentation is somewhat more common--what is that population?
-Children.
What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?

The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Noninflammatory

What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.
What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

If spontaneous recovery fails to occur, what should you do?
You should question the diagnosis.
Optic Neuropathy

- Inflammatory
- Noninflammatory

Typical Optic Neuritis

**What is the pattern of vision loss in typical optic neuritis?**
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**How profound is the vision loss?**
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

**What is the long-term visual prognosis?**
Very good—about 95% will be 20/40 or better at one year.
What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
Typical Optic Neuritis

What is the pattern of vision loss in typical optic neuritis?
Unilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Noninflammatory

Typical (demyelinating)

What is the pattern of vision loss in typical optic neuritis? Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss? The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis? Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur? You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously? Neuromyelitis optica (NMO), aka Devic's.
Optic Neuropathy

Inflammatory

Typical (demyelinating)

Noninflammatory

What is the pattern of vision loss in typical optic neuritis? Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss? The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis? Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur? You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously? Neuromyelitis optica (NMO), aka Devic’s disease.
Typical Optic Neuritis

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?
Neuromyelitis optica (NMO), aka Devic’s disease.

Typical optic neuritis presents bilaterally and/or fails to recover spontaneously? Yes or no?
No.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.
Optic Neuropathy

Typical Optic Neuritis

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?
Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).

No
Optic Neuropathy

Inflammatory
Noninflammatory

Typical (demyelinating)

Atypical

Infectious
Immune
Ischemic
Compressive
Toxic/nutritional
Congenital/hereditary
Traumatic

What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

How does transverse myelitis present clinically?
As a symmetric para- or quadriparesis, often with sensory loss. (Symmetric deficits are distinctly uncommon in MS.)

What is optic neuritis? What is the other?
Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).
**Optic Neuropathy**

**Inflammatory**
- Typical (demyelinating)
- Atypical
- Infectious
- Immune
- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

**Noninflammatory**
- Optic neuritis

---

**Typical Optic Neuritis**

- What is the pattern of vision loss in typical optic neuritis?
  - Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

- How profound is the vision loss?
  - The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

- What is the long-term visual prognosis?
  - Very good—about 95% will be 20/40 or better at one year

- What should you do if spontaneous recovery fails to occur?
  - You should question the diagnosis

**Neuromyelitis optica (NMO), aka Devic’s disease**

- What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?

---

**Transverse myelitis**

- NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly)

---

**How does transverse myelitis present clinically?**

As a symmetric para- or quadriparesis, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)
**Optic Neuropathy**

*Typical Optic Neuritis*

- **Inflammatory**
  - Demyelinating
  - Atypical
- **Noninflammatory**
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

**What is the pattern of vision loss in typical optic neuritis?**
- Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**How profound is the vision loss?**
- The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

**What is the long-term visual prognosis?**
- Very good—about 95% will be 20/40 or better at one year.

**What should you do if spontaneous recovery fails to occur?**
- You should question the diagnosis.

**What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?**
- Neuromyelitis optica (NMO), aka Devic’s disease.

**Transverse myelitis.** NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly)

**How does transverse myelitis present clinically?**
- As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)

**How does transverse myelitis present radiologically?**
- As longitudinally extensive spinal cord lesions

**How long are we talking about?**
- 2-3 vertebral segments or so.
Typical Optic Neuritis

How does transverse myelitis present clinically?
As a symmetric para- or quadriparesis, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)

Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly)

How does transverse myelitis present radiologically?
As longitudinally extensive spinal cord lesions

Neuromyelitis optica (NMO), aka Devic’s disease

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
**Typical Optic Neuritis**

Optic Neuropathy

How does transverse myelitis present clinically?
As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly **uncommon** in MS)

**Transverse myelitis.** NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly)

How does transverse myelitis present **radiologically**?
As longitudinally extensive spinal cord lesions

How long are we talking about?
2-3 vertebral segments or so

Neuromyelitis optica (NMO), aka **Devic’s disease**

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
Optic Neuropathy

Typical Optic Neuritis

Optic Neuropathy

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

Neuromyelitis optica (NMO), aka Devic’s disease

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.

How does transverse myelitis present clinically?
As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS).

Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).

How does transverse myelitis present radiologically?
As longitudinally extensive spinal cord lesions.

How long are we talking about?
2-3 vertebral segments or so.
Optic Neuropathy

Typical Optic Neuritis

What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?

Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis.

So, the spinal cord lesions in NMO are longitudinally extensive... Perchance, is the same true of the optic nerve lesions in NMO?

Transverse myelitis.

As longitudinally extensive spinal cord lesions.

How long are we talking about?

2-3 vertebral segments or so.

Asymmetric function?

Yes.

What is the long-term visual prognosis?

Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis.
Optic Neuropathy

**Typical Optic Neuritis**

- **How does transverse myelitis present clinically?**
  - As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS).

- **Transverse myelitis.** NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).

- **How does transverse myelitis present radiologically?**
  - As longitudinally extensive spinal cord lesions.

- **How long are we talking about?**
  - 2-3 vertebral segments or so.

- **How does transverse myelitis present clinically?**
  - As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS).

- **So, the spinal cord lesions in NMO are longitudinally extensive... Perchance, is the same true of the optic nerve lesions in NMO?**
  - Indeed it is! Further, optic nerve lesions in NMO tend to be more posterior than those found in typical optic neuritis.

- **What is the long-term visual prognosis?**
  - Very good—about 95% will be 20/40 or better at one year.

- **What should you do if spontaneous recovery fails to occur?**
  - You should question the diagnosis.
**Optic Neuropathy**

**Typical Optic Neuritis**

- **How does transverse myelitis present clinically?**
  - As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS).

- **Transverse myelitis. NMO involves two specific disease processes occurring together.**
  - One is optic neuritis; what is the other?
  - Transverse myelitis. NMO is primarily a disease of 'the optic nerves and spinal cord' (although importantly, other aspects of the CNS can be affected—more shortly).

- **How does transverse myelitis present radiologically?**
  - As longitudinally extensive spinal cord lesions.

- **How long are we talking about?**
  - 2-3 vertebral segments or so.

- **How does transverse myelitis present clinically?**
  - As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS).

- **So, the spinal cord lesions in NMO are longitudinally extensive...Perchance, is the same true of the optic nerve lesions in NMO?**
  - Indeed it is! Further, optic nerve lesions in NMO tend to be more posterior than those found in typical optic neuritis.

**What is the long-term visual prognosis?**
- Very good—about 95% will be 20/40 or better at one year.

**What should you do if spontaneous recovery fails to occur?**
- You should question the diagnosis.
**Optic Neuropathy**

**Typical Optic Neuritis**

What is the pattern of vision loss in typical optic neuritis?
- Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?
- The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?
- Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
- You should question the diagnosis

---

**Transverse Myelitis**

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?
- Transverse myelitis

How does transverse myelitis present radiologically?
- As longitudinally extensive spinal cord lesions

How long are we talking about?
- 2-3 vertebral segments or so

How does transverse myelitis present clinically?
- As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)

So, the spinal cord lesions in NMO are longitudinally extensive...Perchance, is the same true of the optic nerve lesions in NMO?
- Indeed it is! Further, optic nerve lesions in NMO tend to be more posterior than those found in typical optic neuritis.

How posterior are we talking about here?
- They can extend to the optic chiasm, which is almost unheard of in typical optic neuritis

---

What is the long-term visual prognosis?
- Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
- You should question the diagnosis
Optic Neuropathy

Typical Optic Neuritis

How does transverse myelitis present clinically?
As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)

Transverse myelitis. NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?
Transverse myelitis. NMO is primarily a disease of 'the optic nerves and spinal cord' (although importantly, other aspects of the CNS can be affected—more shortly)

How does transverse myelitis present radiologically?
As longitudinally extensive spinal cord lesions

How long are we talking about?
2-3 vertebral segments or so

How does transverse myelitis present clinically?
As a symmetric para- or quadriplegia, often with sensory loss (note that symmetric deficits are distinctly uncommon in MS)

So, the spinal cord lesions in NMO are longitudinally extensive…Perchance, is the same true of the optic nerve lesions in NMO?
Indeed it is! Further, optic nerve lesions in NMO tend to be more posterior than those found in typical optic neuritis.

How posterior are we talking about here?
They can extend to the optic chiasm, which is almost unheard of in typical optic neuritis

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
Optic Neuropathy

Typical Optic Neuritis

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other? Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).

Time for the ‘more shortly.’ When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?

--Intractable…
--Intractable…
--Intractable…

\[Typical \text{ Optic Neuritis}\]

What is the pattern of vision loss in typical optic neuritis? Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss? The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis? Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur? You should question the diagnosis.

Neuromyelitis optica (NMO), aka Devic’s disease

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other? Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS can be affected—more shortly).

What should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously? Neuromyelitis optica (NMO), aka Devic’s disease.

Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur? You should question the diagnosis.
Optic Neuropathy

Typical Optic Neuritis

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?

Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS an be affected—more shortly)

Time for the ‘more shortly.’ When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?

--Intractable… nausea and vomiting
--Intractable… hiccups
--Intractable… daytime somnolence

What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?

Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?

Neuromyelitis optica (NMO), aka Devic’s disease

NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other?

Transverse myelitis. NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS an be affected—more shortly)
**Optic Neuritis**

**Typical Optic Neuritis**

- Optic Neuropathy
- Inflammatory
  - Typical (demyelinating)
  - Atypical
- Noninflammatory
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

**What is the pattern of vision loss in typical optic neuritis?**
- Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**How profound is the vision loss?**
- The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

**What is the long-term visual prognosis?**
- Very good—about 95% will be 20/40 or better at one year.

**What should you do if spontaneous recovery fails to occur?**
- You should question the diagnosis.

**What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?**
- Neuromyelitis optica (NMO), aka Devic’s disease.

- NMO involves two specific disease processes occurring together. One is optic neuritis; what is the other? **Transverse myelitis.**
- NMO is primarily a disease of ‘the optic nerves and spinal cord’ (although importantly, other aspects of the CNS an be affected—more shortly).

**Time for the ‘more shortly.’** When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?
- Intractable…**nausea and vomiting**
- Intractable…**hiccups**
- Intractable…**daytime somnolence**

**Make a mental note of these—they’re very important!**
- They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.

**What should you do if spontaneous recovery fails to occur?**
- You should question the diagnosis.
Optic Neuropathy

**Typical Optic Neuritis**

Does it really matter that much whether a pt has NMO vs typical optic neuritis?

**Optic Neuropathy**

Time for the ‘more shortly.’ When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?

--Intractable…nausea and vomiting
--Intractable…hiccups
--Intractable…daytime somnolence

Make a mental note of these—they’re very important! They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.

What should you do if spontaneous recovery fails to occur? You should question the diagnosis.

Very good—about 95% will be 20/40 or better at one year.

You should question the diagnosis.
Optic Neuropathy

Typical Optic Neuritis

Does it really matter that much whether a pt has NMO vs typical optic neuritis? Very much so, for two reasons:
1)
2)

Make a mental note of these—they’re very important! They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

Time for the 'more shortly.' When NMO affects 'other aspects of the CNS,' one of three classic (but not pathognomonic!) 'intractable' presentations may arise. What are they?
--Intractable...nausea and vomiting
--Intractable...hiccups
--Intractable...daytime somnolence

Very good. Stop me in care for any more lengthy explanations. Let’s go back to your pt...
Optic Neuropathy

Typical Optic Neuritis

Does it really matter that much whether a pt has NMO vs typical optic neuritis?
Very much so, for two reasons:
1) The treatment regimens for the two diseases are different
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being paralysis or even death owing to the transverse myelitis (untreated NMO carries a very high risk of both)

Time for the 'more shortly.' When NMO affects 'other aspects of the CNS,' one of three classic (but not pathognomonic!) 'intractable' presentations may arise. What are they?
--Intractable…nausea and vomiting
--Intractable…hiccups
--Intractable…daytime somnolence

Make a mental note of these—they're very important! They will clue you in to the fact you're dealing with NMO rather than typical optic neuritis.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis

Typical

Inflammatory
Noninflammatory

Demyelinating
Atypical

Infectious
Immune

Ischemic
Compressive

Toxic/nutritional
Congenital/hereditary

Traumatic

Infectious
Immune

Ischemic
Compressive

Toxic/nutritional
Congenital/hereditary

Traumatic
**Typical Optic Neuritis**

In general terms, what is the key difference in the treatment regimens?

The treatment regimens for the two diseases are different

1) The treatment regimens for the two diseases are different
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being paralysis or even death owing to the transverse myelitis (untreated NMO carries a very high risk of both)

Time for the ‘more shortly.’ When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?

-- Intractable…nausea and vomiting
-- Intractable…hiccups
-- Intractable…daytime somnolence

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis

Typical Optic Neuritis

Make a mental note of these—they’re very important!

They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.
**Typical Optic Neuritis**

*In general terms, what is the key difference in the treatment regimens?*

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

The treatment regimens for the two diseases are different.

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).

**In general terms, what is the key difference in the treatment regimens?**

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

**The treatment regimens for the two diseases are different**

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).

**In general terms, what is the key difference in the treatment regimens?**

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

**The treatment regimens for the two diseases are different**

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).

**In general terms, what is the key difference in the treatment regimens?**

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

**The treatment regimens for the two diseases are different**

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).

**In general terms, what is the key difference in the treatment regimens?**

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

**The treatment regimens for the two diseases are different**

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).

**In general terms, what is the key difference in the treatment regimens?**

Typical optic neuritis is treated with **immunomodulatory** meds, whereas NMO is treated with **immunosuppressive** regimens.

**The treatment regimens for the two diseases are different**

1) **The treatment regimens for the two diseases are different**
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being **paralysis** or even **death** owing to the transverse myelitis (untreated NMO carries a very high risk of both).
**Typical Optic Neuritis**

In general terms, what is the key difference in the treatment regimens? Typical optic neuritis is treated with immunomodulatory meds, whereas NMO is treated with immunosuppressive regimens.

So, NMO doesn’t respond to immunomodulatory meds?

The treatment regimens for the two diseases are different.

1) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being paralysis or even death owing to the transverse myelitis (untreated NMO carries a very high risk of both).

2) Make a mental note of these—他们’re very important! They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis.
Typical Optic Neuritis

In general terms, what is the key difference in the treatment regimens? Typical optic neuritis is treated with immunomodulatory meds, whereas NMO is treated with immunosuppressive regimens.

So, NMO doesn’t respond to immunomodulatory meds?
Oh it responds all right--it gets worse

The treatment regimens for the two diseases are different
1) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being paralysis or even death owing to the transverse myelitis (untreated NMO carries a very high risk of both).

Does it really matter that much whether a pt has NMO vs typical optic neuritis?
Very much so, for two reasons:
1) The treatment regimens for the two diseases are different
2) By correctly identifying and treating NMO, you might preclude the dreaded sequelae of the disease, those being paralysis or even death owing to the transverse myelitis (untreated NMO carries a very high risk of both).

NMO rather than typical optic neuritis.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

The diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously.

Neuromyelitis optica (NMO), aka Devic’s disease

Time for the ‘more shortly.’ When NMO affects ‘other aspects of the CNS,’ one of three classic (but not pathognomonic!) ‘intractable’ presentations may arise. What are they?
--Intractable…nausea and vomiting
--Intractable…hiccups
--Intractable…daytime somnolence

Make a mental note of these--they’re very important! They will clue you in to the fact you’re dealing with NMO rather than typical optic neuritis.
Typical Optic Neuritis

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.

In a few words, how would you characterize the pathological process in NMO?
As an antibody-mediated autoimmune condition.

What does this protein do?
It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.
**Typical Optic Neuritis**

*In a few words, how would you characterize the pathological process in NMO?*

As an antibody-mediated autoimmune condition

---

**What is the pattern of vision loss in typical optic neuritis?**

**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later

**How profound is the vision loss?**

The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

**What is the long-term visual prognosis?**

Very good—about 95% will be 20/40 or better at one year

**What should you do if spontaneous recovery fails to occur?**

You should question the diagnosis

---

**What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?**

**Neuromyelitis optica (NMO), aka Devic’s disease**

---

**In a few words, how would you characterize the pathological process in NMO?**

As an antibody-mediated autoimmune condition

---

**What is the target of the antibodies?**

The protein *aquaporin-4*

---

**What does this protein do?**

It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.
**Typical Optic Neuritis**

In a few words, how would you characterize the pathological process in NMO? As an antibody-mediated autoimmune condition

What is the target of the antibodies?

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?

Neuromyelitis optica (NMO), aka Devic’s disease

What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?

The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?

Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?

You should question the diagnosis
In a few words, how would you characterize the pathological process in NMO?
As an antibody-mediated autoimmune condition

What is the target of the antibodies?
The protein *aquaporin-4*

In a few words, how would you characterize the pathological process in typical optic neuritis?

**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?

Neuromyelitis optica (NMO), aka Devic’s disease

What is the pattern of vision loss in typical optic neuritis?

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year
**Typical Optic Neuritis**

**What is the pattern of vision loss in typical optic neuritis?**
- Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

**How profound is the vision loss?**
- The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

**What is the long-term visual prognosis?**
- Very good—about 95% will be 20/40 or better at one year.

**What should you do if spontaneous recovery fails to occur?**
- You should question the diagnosis.

**What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?**
- Neuromyelitis optica (NMO), aka *Devic’s disease*.

**In a few words, how would you characterize the pathological process in NMO?**
- As an antibody-mediated autoimmune condition.

**What is the target of the antibodies?**
- The protein *aquaporin-4*.

**What does this protein do?**
- It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.
**Typical Optic Neuritis**

*In a few words, how would you characterize the pathological process in NMO?*
As an antibody-mediated autoimmune condition.

What is the target of the antibodies?
The protein **aquaporin-4**.

What does this protein do?

What is the pattern of vision loss in typical optic neuritis?
**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
**Neuromyelitis optica (NMO), aka Devic’s disease.**
Typical Optic Neuritis

In a few words, how would you characterize the pathological process in NMO?
As an antibody-mediated autoimmune condition

What is the target of the antibodies?
The protein **aquaporin-4**

What does this protein do?
It is the main water channel protein in **CNS cell type** cells. Damage to this protein interferes with CNS fluid homeostasis.

What is the pattern of vision loss in typical optic neuritis?
**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
**Neuromyelitis optica (NMO), aka Devic’s disease**

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis
**Typical Optic Neuritis**

In a few words, how would you characterize the pathological process in NMO?
As an antibody-mediated autoimmune condition

What is the target of the antibodies?
The protein **aquaporin-4**

What does this protein do?
It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.

What is the pattern of vision loss in typical optic neuritis?
**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

What is the long-term visual prognosis?
Very good—about 95% will be 20/40 or better at one year

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
**Neuromyelitis optica (NMO)**, aka **Devic’s disease**
**Typical Optic Neuritis**

*In a few words, how would you characterize the pathological process in NMO?*

As an antibody-mediated autoimmune condition.

*What is the target of the antibodies?*

The protein, **aquaporin-4**.

*What does this protein do?*

It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.

*What is the pattern of vision loss in typical optic neuritis?*

Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

*How profound is the vision loss?*

The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

*What is the long-term visual prognosis?*

Very good—about 95% will be 20/40 or better at one year.

*What should you do if spontaneous recovery fails to occur?*

You should question the diagnosis.

*What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?*

Neuromyelitis optica (NMO), aka Devic’s disease.
### Typical Optic Neuritis

**In a few words, how would you characterize the pathological process in NMO?**
As an antibody-mediated autoimmune condition

**What is the target of the antibodies?**
The protein **aquaporin-4**

**What does this protein do?**
It is the main water channel protein in astroglial cells. Damage to this protein interferes with CNS fluid homeostasis.

**Bilateral vision loss** developing over a period of a few days, with spontaneous recovery beginning a week or two later

**What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?**
**Neuromyelitis optica (NMO), aka Devic’s disease**

**What is the pattern of vision loss in typical optic neuritis?**
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

**How profound is the vision loss?**
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

**What is the long-term visual prognosis?**
Very good—about 95% will be 20/40 or better at one year

**What should you do if spontaneous recovery fails to occur?**
You should question the diagnosis

---

**Is lab testing available to detect these antibodies?**
Yes, and they form part of the diagnostic criteria for NMO
Optic Neuropathy

Inflammatory

Noninflammatory

Typical (demyelinating)

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease.

What is the long-term visual prognosis in NMO?
Very good—about 95% will be 20/40 or better at one year.

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Noninflammatory

What is the pattern of vision loss in typical optic neuritis?
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later.

How profound is the vision loss?
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range.

What is the long-term visual prognosis in NMO?
Very good—about 95% will be 20/40 or better at one year.

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease

What should you do if spontaneous recovery fails to occur?
You should question the diagnosis.
Typical Optic Neuritis

(Warning: Soapbox speech ahead)
Can typical optic neuritis present bilaterally? Yes. Can it be chronic? Yes. But you (speaking to errbody who isn’t a fellowship trained neuro-oph) shouldn’t make that call, because they are zebras, if not unicorns (or even zebracorns). So, don’t select ‘bilateral optic neuritis’ or ‘chronic optic neuritis’ as answers on the OKAP or WQEs, don’t utter those words when taking the Boards, and most importantly, don’t write them on a pt’s chart!

**What is the pattern of vision loss in typical optic neuritis?**
Bilateral vision loss developing over a period of a few days, with spontaneous recovery beginning a week or two later

**How profound is the vision loss?**
The vision can be anywhere from 20/20 to NLP; however, most are in the 20/40 – 20/200 range

**What is the long-term visual prognosis in NMO?**
Very good—about 95% will be 20/40 or better at one year

*poor—vision <20/200 in at least one eye is the rule!

**What should you do if spontaneous recovery fails to occur?**
You should question the diagnosis

What diagnosis should be considered if optic neuritis presents bilaterally and/or fails to recover spontaneously?
Neuromyelitis optica (NMO), aka Devic’s disease
**Optic Neuropathy**

- **Inflammatory**
  - Typical (demyelinating)
  - Atypical

- **Noninflammatory**
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

---

*What is the usual appearance of the ONH in typical optic neuritis?*

Benign—no edema is the rule.

*What should you do if a typical optic neuritis pt has florid disc edema?*

You should question the diagnosis.
What is the usual appearance of the ONH in typical optic neuritis? Benign—no edema is the rule. Or if present, mild edema w/o heme.
What is the usual appearance of the ONH in typical optic neuritis? Benign—no edema is the rule. Or if present, mild edema w/o heme.

What should you do if a typical optic neuritis pt has florid disc edema?
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Noninflammatory

- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

What is the usual appearance of the ONH in typical optic neuritis? Benign—no edema is the rule. Or if present, mild edema w/o heme.

What should you do if a typical optic neuritis pt has florid disc edema? You should question the diagnosis.
Is typical optic neuritis associated with ocular pain?

Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Noninflammatory

Ischemic

Compressive

Toxic/nutritional

Congenital/hereditary

Traumatic

Yes. >90% will complain of pain, especially during ocular rotations.

You should question the diagnosis
Is typical optic neuritis associated with ocular pain? Yes. >90% will complain of pain, especially during ocular rotations.
Is typical optic neuritis associated with ocular pain? Yes. >90% will complain of pain, especially during ocular rotations.

What should you do if a typical optic neuritis pt does not c/o pain?

- Inflammatory
  - Typical (demyelinating)
  - Atypical

- Noninflammatory
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Noninflammatory

Is ischemic optic neuritis associated with ocular pain?
Yes. >90% will complain of pain, especially during ocular rotations.

What should you do if a typical optic neuritis pt does not c/o pain?
You should question the diagnosis.
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

- Typical (demyelinating)
- Atypical

Noninflammatory

- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

Is NMO optic neuritis associated with ocular pain?

What about optic neuritis due to NMO--is it associated with pain?

What should you do if a typical optic neuritis pt does not c/o pain?

You should question the diagnosis.
Optic Neuropathy

Inflammatory

- Typical (demyelinating)
- Atypical

Noninflammatory

- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

Is NMO optic neuritis associated with ocular pain?

What about optic neuritis due to NMO—is it associated with pain?

No, but much less so—only 1/3 will complain of ocular pain

You should question the diagnosis
With respect to treatment, what is the key difference between typical and atypical ON?

Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Infectious

Immune

Huh? What about the Optic Neuritis Treatment Trial (ONTT)? Didn’t it show a benefit of IV steroids (and a deleterious effect of PO steroids)?

True and true. But the effect of IV steroids was to 1) hasten visual recovery and 2) delay onset of MS; the effect of PO steroids was to increase the risk of recurrent optic neuritis.

Neither treatment had any effect on final visual outcome, or on the likelihood of developing MS.
With respect to treatment, what is the key difference between typical and atypical ON?

In atypical ON, treatment can influence final visual outcome; whereas in typical ON, treatment has no effect on final visual outcome.
With respect to treatment, what is the key difference between typical and atypical ON?
In atypical ON, treatment can influence final visual outcome; whereas in typical ON, treatment has no effect on final visual outcome.

Huh? What about the Optic Neuritis Treatment Trial (ONTT)? Didn’t it show a benefit of IV steroids (and a deleterious effect of PO steroids)?
With respect to treatment, what is the key difference between typical and atypical ON?
In atypical ON, treatment can influence final visual outcome; whereas in typical ON, treatment has no effect on final visual outcome.

Huh? What about the Optic Neuritis Treatment Trial (ONTT)? Didn’t it show a benefit of IV steroids (and a deleterious effect of PO steroids)?
True and true. But the effect of IV steroids was to 1) hasten visual recovery and 2) delay onset of MS; the effect of PO steroids was to increase the risk of recurrent optic neuritis. Neither treatment had any effect on final visual outcome, or on the likelihood of developing MS.
Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Infectious

Immune

**Typical Optic Neuritis**

**With respect to treatment, what is the key difference between typical and atypical ON?**

**In atypical ON, treatment can influence final visual outcome;** whereas in typical ON, treatment has no effect on final visual outcome.

*Huh? What about the Optic Neuritis Treatment Trial (ONTT)? Didn’t it show benefit of IV steroids (and a deleterious effect of PO steroids)?*

*True and true. But the effect of IV steroids was to 1) hasten visual recovery and 2) delay onset of MS; the effect of PO steroids was to increase the risk of recurrent optic neuritis. Neither treatment had any effect on final visual outcome, or on the likelihood of developing MS.*

*On the other hand, most infectious and immune processes can be either cured or controlled via proper treatment!*
Typical Optic Neuritis

If a pt presents with typical optic neuritis, what sort of workup should be done?

If a pt presents with typical optic neuritis, what sort of workup should be done?

If a pt presents with typical optic neuritis, what sort of workup should be done?

If a pt presents with typical optic neuritis, what sort of workup should be done?

If a pt presents with typical optic neuritis, what sort of workup should be done?
Optic Neuropathy

Inflammatory

Typical (demyelinating)

Atypical

Noninflammatory

Ischemic

Compressive

Toxic/nutritional

Congenital/hereditary

If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS

What about lumbar puncture?
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS

What about lumbar puncture? It is not indicated
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture? It is not indicated.

**Probability of MS by 15 years if**
- ...no white matter changes on MRI:
- ...white matter changes present:
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture? It is not indicated.

Probability of MS by 15 years if...
- no white matter changes on MRI: 25%
- white matter changes present: 72%
If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Probability of MS by 15 years if...

...no white matter changes on MRI: 25%...

...white matter changes present: 72%

With regard to the 25% of ON patients who went on to develop MS despite having no white-matter changes...

Which of the following characteristics were associated with an increased risk of developing MS?

- Severe ONH edema?
- Lack of pain?
- VA = NLP?
- Macular exudates?
If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Probability of MS by 15 years if...

...no white matter changes on MRI: 25%

...white matter changes present: 72%

With regard to the 25% of ON patients who went on to develop MS despite having no white-matter changes...

Which of the following characteristics were associated with an increased risk of developing MS?

Severe ONH edema?
Lack of pain?
VA = NLP?
Macular exudates?

NO!

All of these were associated with a decreased risk of developing MS.
If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.

Probability of MS by 15 years if...
...no white matter changes on MRI: 25%
...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?
If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.

Probability of MS by 15 years if...
...no white matter changes on MRI: 25%
...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?
Just one.
If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Probability of MS by 15 years if...

...no white matter changes on MRI: 25%

...white matter changes present: 72%

Why is it important to know the probability of developing MS?

Because it may influence the pt's decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple Sclerosis Prevention Study.

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
Typical Optic Neuritis

If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Why is it important to know the probability of developing MS?

Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...

... no white matter changes on MRI: 25%
... white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
**Optic Neuropathy**

- **Inflammatory**
  - Typical (demyelinating)
  - Atypical
- **Noninflammatory**
  - Infectious
  - Immune
  - Ischemic
  - Compressive
  - Toxic/nutritional
  - Congenital/hereditary
  - Traumatic

If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Why is it important to know the probability of developing MS?

Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

**Probability of MS by 15 years if…**

- no white matter changes on MRI: 25%
- white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
Optic Neuropathy

Inflammatory

Typical (demyelinating)

Typical Optic Neuritis

Noninflammatory

Why is it important to know the probability of developing MS?
Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple Sclerosis Prevention Study.

<table>
<thead>
<tr>
<th>Probability of MS by 15 years if...</th>
</tr>
</thead>
<tbody>
<tr>
<td>...no white matter changes on MRI: 25%</td>
</tr>
<tr>
<td>...white matter changes present: 72%</td>
</tr>
</tbody>
</table>

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.

If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.
**Optic Neuropathy**

- Inflammatory
  - Typical (demyelinating)
  - Atypical
- Noninflammatory

**Why is it important to know the probability of developing MS?**
Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

**What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?**
The CHAMPS, which stands for Controlled High-risk Avonex Multiple Sclerosis Prevention Study.

**Probability of MS by 15 years if...**
- ...no white matter changes on MRI: \(25\%\)
- ...white matter changes present: \(72\%\)

**How many white matter lesions have to be present to convey an increased risk of MS?**
Just one.

If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.
Typical Optic Neuritis

Optic Neuropathy

Inflammatory

Typical (demyelinating)

If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

Why is it important to know the probability of developing MS?
Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?
The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...
...no white matter changes on MRI: 25%
...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?
Just one.

Noninflammatory

Infectious

Immune

Ischemic

Compressive

Toxic/nutritional

Congenital/hereditary

Traumatic
Typical Optic Neuritis

If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?

It is not indicated.

Why is it important to know the probability of developing MS?

Because it may influence the pt's decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...

...no white matter changes on MRI: 25%

...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
Optic Neuropathy

Inflammatory
- Demyelinating
- Infectious
- Immune
- Ischemic
- Compressive
- Toxic/nutritional
- Congenital/hereditary
- Traumatic

Noninflammatory

If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That's it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What is the generic name of Avonex?
IFNβ-1a

Why is it important to know the probability of developing MS?
Because it may influence the pt's decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?
The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...
- No white matter changes on MRI: 25%
- White matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS? Just one.

In general terms, what sort of drug is Avonex?
An immunomodulator.

What is its therapeutic benefit in ON patients with MRI changes?
It reduces the risk of developing MS.

How many white matter lesions have to be present to convey an increased risk of MS?
**Typical Optic Neuritis**

If a pt presents with typical optic neuritis, what sort of workup should be done?

**MRI brain and orbits, with contrast. That's it.**

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

Why is it important to know the probability of developing MS?

Because it may influence the pt's decision to receive MS prophylaxis with the drug **Avonex**.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...

- No white matter changes on MRI: 25%
- White matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
If a pt presents with typical optic neuritis, what sort of workup should be done?

MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?

To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What is the generic name of Avonex?

IFNβ-1a

In general terms, what sort of drug is Avonex?

An immunomodulator

Why is it important to know the probability of developing MS?

Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?

The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if…

…no white matter changes on MRI: 25%

…white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?

Just one.
Typical Optic Neuritis

If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.

Why is it important to know the probability of developing MS?
Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?
The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...
...no white matter changes on MRI: 25%
...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?
Just one.

What is the generic name of Avonex?
IFNβ-1a

In general terms, what sort of drug is Avonex?
An immunomodulator

What is its therapeutic benefit in ON patients with MRI changes?
It reduces the risk of developing MS.

In general terms, what sort of drug is Avonex?
An immunomodulator

If a pt presents with typical optic neuritis, what sort of workup should be done?
MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI?
To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture?
It is not indicated.

Why is it important to know the probability of developing MS?
Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event?
The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...
...no white matter changes on MRI: 25%
...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS?
Just one.

What is the generic name of Avonex?
IFNβ-1a

In general terms, what sort of drug is Avonex?
An immunomodulator

What is its therapeutic benefit in ON patients with MRI changes?
It reduces the risk of developing MS.
If a pt presents with typical optic neuritis, what sort of workup should be done? MRI brain and orbits, with contrast. That’s it.

What is the purpose of the MRI? To look for white-matter changes, the presence of which increases the likelihood of developing MS.

What about lumbar puncture? It is not indicated.

Why is it important to know the probability of developing MS? Because it may influence the pt’s decision to receive MS prophylaxis with the drug Avonex.

What landmark study confirmed the ability of Avonex to reduce the risk of developing MS after a demyelinating event? The CHAMPS, which stands for Controlled High-risk Avonex Multiple sclerosis Prevention Study.

Probability of MS by 15 years if...

- ...no white matter changes on MRI: 25%
- ...white matter changes present: 72%

How many white matter lesions have to be present to convey an increased risk of MS? Just one.

Typical Optic Neuritis

Typical (demyelinating)

Inflammatory

Infectious

Immune

Ischemic

Compressive

Toxic/nutritional

Congenital/hereditary

Noninflammatory

Traumatic