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Camphorated Oil Related Optic Neuritis: Review of 21 Cases

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Abstract

21 Cases of Optic neuritis have been reported from Tertiary care hospital of Northern India. All of these patients were chronic camphorated hair oil users for more than 5 years, all had onset in summer season, with normal neuro-radiological investigation and with absence of oligoclonal bands in Cerebro spinal fluid. Author proposes a new group of these patients as "CORON" that is Camphorated oil related Optic Neuritis. All of these patients had variable response with intravenous pulse Methylprednisolone therapy.

Key Words: Optic neuritis, Camphor, Hair oil, Methylprednisolone

INTRODUCTION:

Camphor exhibits a number of biological properties such as insecticidal, antimicrobial, antiviral, anticoccidial, anti-nociceptive, anticancer and antitussive activities[1], in addition to its use as a skin penetration enhancer. However, camphor is a toxic substance and many cases of camphor poisoning have been documented[1]. Camphor addiction in various forms has been

known in India[2]. However, there is no report of optic nerve inflammation with camphor toxicity. This is the first ever report which may give a new insight about the association of camphorated oil and it's any possible links with Optic neuritis.

Camphorated hair oil (CHO) usage is prevalent throughout India, especially in Northern part of India[2]. Their uses have been for recreational use as hair oil, for medicinal purposes, even for reliving headache or as sedative[2]. Due to extensive and rampant use of these oils, use of company made and local country made CHO with varying concentration of camphor is available for use. Over years of use of CHO, nothing much has been known about the pattern and prevalence of these toxic side effects. We collected series of patients who have been using CHO for more than 5 years and had developed Optic neuritis. The research paper discusses the possible role of camphorated oil in the pathogenesis of these special varieties of optic neuritis which is named as a new identity Camphorated Oil Related optic Neuritis "CORON" in this paper.

MATERIAL AND METHODS

Since June 2012 to February 2014 total 39 patients of Optic Neuritis were registered and treated out of which 21 patients had been chronic users of CHO "CORON". All the patients of Optic Neuritis were subjected to hematological, biochemical analysis, brain magnetic resonance imaging with special sequences of Optic nerve, Cerebrospinal fluid analysis including oligoclonal band, VDRL, Visual evoked potential. Patients were given pulse intravenous methyl Prednisolone for 5 days. Patients were followed at the end of 1st month and at 6th month. At the same time 13 samples of camphorated oils were also collected from 15 districts of Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Jharkhand and Nepal.

RESULT

21 patients of CORON were from 2 Countries i.e. India (5 states - Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Jharkhand) and Nepal , 7 were from Bihar, 6 from Uttar Pradesh, 3 each from Madhya Pradesh and Jharkhand, and one each from Chhattisgarh and Nepal (Patients detail given in Table 1). Out of 13 samples of camphorated oil collected from 15 districts, 3were branded oil and rests were local made camphorated oil. All the 21 patients of CORON had following features in common. These are-

1. All of these cases have Summer Onset.
2. Not proceeded by retro-orbital pain.
3. Chronic user of camphorated oil.
4. Normal neuron-imaging of optic nerves.
5. Moderate response to intravenous methylprednisolone.
6. Mild (117 – 123 ms) prolongation of Visual evoked potentials in effected optic nerve.

DISCUSSION

Patients of Camphorated Oil Related Optic Neuritis (CORON) had definitely different clinical characteristics and also all of them have been

subjected with more than 5 years of camphorated oil overuse or addicted to these oils. There have been reports of toxic effects of camphor[1] and its addiction with various camphor based substances[2]. Women were in higher number with camphor addiction[2].

In the present study, out of 21 patients, 14 were female. This study could establish the association of chronic camphorated oil use and presence of optic neuritis with different and definite characteristics. The big question remains to be answered. Is the camphor or any component is responsible for these optic neuritis?

Optic nerve neuritis is one of the most important differential diagnoses of Visual loss in young and middle aged adults [3, 4, 5]. The prognosis in terms of functional outcome is generally good [3, 4]. The diagnosis of optic neuritis is clinical[5]. On the other hand, fragrant camphor tree (Cinnamomum camphora) and its products, such as camphor oil, have been coveted since ancient times[1]. Having a rich history of traditional use, it was particularly used as a fumigant during the era of the Black Death and considered as a valuable ingredient in both perfume and embalming fluid[1].

In its typical form, optic neuritis presents as an inflammatory demyelinating disorder of the optic nerve. Atypical forms of optic neuritis can occur, either in association with other inflammatory disorders or due to toxicity of any substance. Differential diagnosis includes various optic nerve and retinal disorders. Diagnostic investigations include MRI, visual evoked potentials, and CSF examination. Treatment of typical forms with high-dose corticosteroids shortens the period of acute visual dysfunction but does not affect the final visual outcome. Atypical forms can necessitate prolonged immunosuppressive regimens.

Camphor is known to activate Transient Receptor Potential (TRP) V3 and causes myelin or axonal activation in rats[6]. However, there are no such definite molecular level injury reports in human. This study may be one of the projections about habitual use of CHO and later associated with Visual loss. Diagnosis of Optic Neuritis was made by clinical and later with neuro physiological investigation. However, in this series of 21 patients, Neuro imaging and CSF investigations were normal and were not of much help in diagnosis.

Author proposes a concept of cutaneous absobtion route of camphor followed by neuronal injury due to camphor. However, the link needs to be established through animal models of camphor induced injury of neurons. The study has limitations which should be completed in future to establish the real link of the proposed theory. These limitations are as follows: no established links of camphor induced neuronal injury; numerous other factors can also result in optic neuritis which should be studied in details.

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Table 1: Clinical, Biochemical, Radiological and outcome analysis of 21 patients of CORON

Patient No.	Age	Sex	Duration of illness	Site of lesion	Brain and Optic Nerve MRI	CSF analysis	CSF Oligoclonal Band	Outcome following
1	43	F	2 months	U/L	Normal	Normal	Absent	Recovered
2	33	F	2Weeks	U/L	Normal	Normal	Absent	Recovered
3	29	F	3 Weeks	U/L	Normal	Normal	Absent	Rcovered
4	36	M	1 months	U/L	Normal	Normal	Absent	Moderate recovery
5	36	F	2 Weeks	U/L	Normal	Normal	Absent	Recovered
6	38	F	1 day	U/L	Normal	Normal	Absent	Moderate recovery
7	27	M	1 week	U/L	Normal	Normal	Absent	Moderate recovery
8	35	M	6 Week	U/L	Normal	Normal	Absent	Recovered
9	43	M	4 Week	U/L	Normal	Normal	Absent	Not Recovered
10	32	F	1 Week	U/L	Normal	Normal	Absent	Recovered
11	29	F	3 days	U/L	Normal	Normal	Absent	Recovered
13	28	F	2 days	U/L	Normal	Normal	Absent	Recovered
14	35	F	14 days	U/L	Normal	Normal	Absent	Recovered
15	24	F	2 Days	U/L	Normal	Normal	Absent	Moderate Recovery
16	40	F	4 days	U/L	Normal	Normal	Absent	Recovered
17	37	M	1 Week	U/L	Normal	Normal	Absent	Recovered
18	28	F	3 Weeks	B/L	Normal	Normal	Absent	Recovered
19	29	F	1 Weeks	B/L	Normal	Normal	Absent	Recovered
20	37	F	3 Weeks	B/L	Normal	Normal	Absent	Recovered
21	48	M	1 Weeks	B/L	Normal	Normal	Absent	Mild recovery

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