

# **A PHYSICIANS APPROACH TO EMF SENSITIVE PATIENTS.**

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My thanks to WHO  
for inviting me to be a speaker and for  
assistance with travel.

Congratulations on convening this  
Seminar on a difficult topic.

Case1. 34 year old female journalist

- symptoms associated with mobile phone for about 5 years.

- noticed a moderate dull pain which comes in sharper waves over her (left) occipital area about 3-4 cm behind, and level with her ear.

- pain usually begins shortly (5-10 min) after using the phone and it lasts for a time proportionate to her use of the phone.

- pain occurs after most calls and she has had episodes more than 50 times.

- first used an analogue phone in 1995 and got symptoms some time later; she now uses a GSM (digital) phone and gets symptoms.

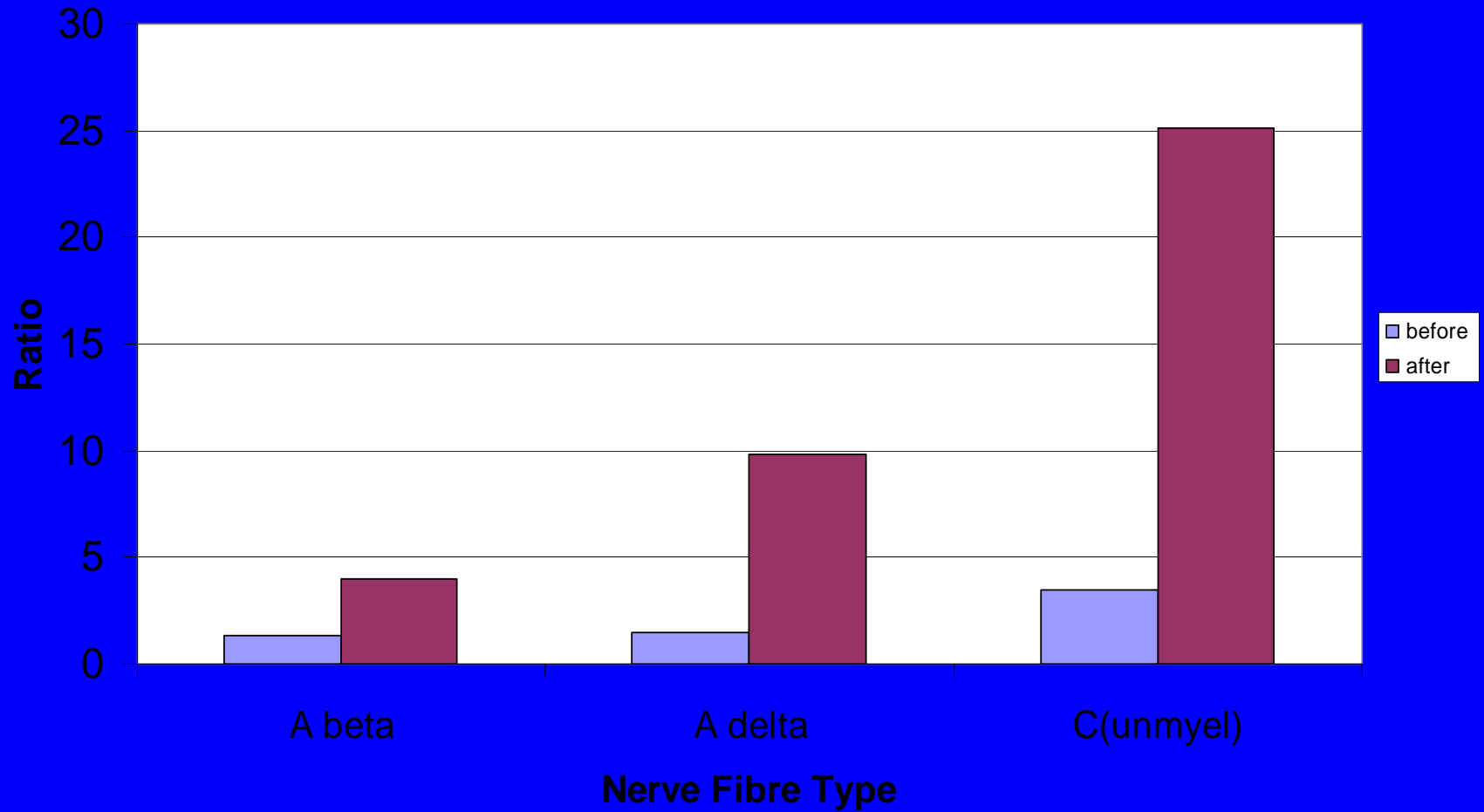
- now limits calls to 2-3/d and tries to use a landline.

She agreed to a provocation study





## Ratio L:R Current Perception Threshold C2,3 fibres before and after mobile phone use



Current perception threshold testing before and after exposure showed marked changes in the C-fibre nerves of the affected area compared to the opposite side.

She was advised the phone was causing her symptoms and to continue use of a hands free kit - this was important to her work.

She was reassured that she was not 'imaging' symptoms or having onset of mental illness or developing a brain tumor. This was important to her.



Case 2. A 30yr old man presented requesting testing to see if he was 'electrosensitive'

1993 - analogue phone - felt warmth and developed a hot ear

1995 - digital phone - headache and earache on the ipsilateral side.

- 1997 - close to powerlines (7mG)
- symptoms became more diffuse:
  - dull pain at the top of his head and bilateral throbbing of the temples,
  - lines in his vision in both eyes, and floaters and coloured lights when closes eyes,
  - bilateral earaches, noticed a twitch of the upper lip, itchiness on the body,
  - low energy levels.

2001 - symptoms worsened with digital mobile phone usage

2003 moved from Sydney to semi-rural area and began to feel better. Minimal exposure to mobile phone and powerline fields.



2003 - single blind test -10/12 correct

Advised probably sensitive to mobile phone fields.

Continued to live in semi-rural area and felt better.

8 months later returned for double-blind testing.

# Double blind provocation test

- stated feeling well - not so sensitive

Day 1 - not accurate (50%)

- said felt poorly overnight with symptoms as above

Day 2 - more accurate - 70%

recognition of phone on/off.

Trial n=1. Overall pattern of worsening when exposed to mobile phone fields (1st provocation test and within the 2nd test) and powerline fields - improve when in semi-rural area with minimal exposures.

In selected cases change of life style to avoidance is warranted.



Case 3. A 32 yr old electronics-technician

- persistent cramp like feeling on the scalp above his right ear for the last 3-4 years.

- feeling worsens when near a mobile phone in use including polling, but not a handset. The pain becomes piercing after several minutes exposure then becomes a dull ache and lasts for 1-2 hours.

- If exposure is prolonged he feels nausea, palpitations and chest constriction.

His doctor had diagnosed tension headaches.

## Provocation test.

- tested 10 times for sensitivity to RFR using a double blind study of exposure to GSM from a mobile phone in a helmet harness.
- Exposures lasted ½ hour in morning and afternoon allowing a washout period of 2-3 hours.
- His sensations were recorded on an agreed 10 point scale every 5 mins, and 5 mins after cessation when he was also asked if the phone had been on or off.

- He accurately judged the field to be on in 7/10 tests which is not statistically significant.

- His flicker test EEG showed some increased responsiveness in the right occipital area.

He was advised he was not sensitive to RFR.

The working diagnosis remains tension-vascular headaches probably associated with job and relationship stresses + mis-attribution to concurrent EMF exposures (phobia).

I advised he should consider rebuilding his life and job knowing he was not hypersensitive to these fields.

With hindsight there was probably a role for a behavioural therapist to help rebuild his career and relationships.



Case 4. A 22 yr male complained of pain over the back of his head and difficulty in concentrating which he attributed to EMF.

He also feels distant to events eg floating above his bed or outside a room looking in.

Onset of symptoms when studying at an overseas religious college when he noticed facial symptoms from a mobile phone and later from a computer and power lines.

On returning to Australia he was initially able to use phones etc without ill effects but months later his symptoms occurred.

He has an inconsistent exposure pattern as shown by his initial symptoms occurring only when overseas but not when first exposed to the same equipment in Australia, although he did later.

He also has evidence of psychotic symptoms as shown by his out of body experiences.

He was advised it was unlikely he had sensitivity to EMF causing his symptoms. He was reluctant to accept this diagnosis.

I contacted the referring GP and advised him of my opinion and that I considered his delusional state warranted psychiatric assessment.



# Diagnosis & Treatment of EMF Sensitivity

Type	Symptoms	Provocation Test	Treatment
1.	Localised symptoms after low level exposure(s)	+ (peripheral nerve)	Selected field minimisation
2.	Generalised symptoms after low level exposure(s)	+ (CNS)	General field minimisation
3.	Generalised symptoms associated with EMF/equipment (phobia)	-	Reassure; decondition (CBT)
4.	Generalised symptoms attributed to EMF / equipment, with delusional psychotic features	-	Refer for psychiatric assessment

The table is based on the cases and shows a spectrum of illness ranging from localised sensitivity to fields through more generalised symptoms to phobic states and psychiatric disorder.

However several aspects of diagnosis and treatment are problematic and warrant discussion.

## Type 1&2 patients.

After exposure to low levels of EMF some patients have symptoms which are distressing and disrupt daily living, and also have relevant changes in lab testing.

These patients need to be diagnosed and managed appropriately regarding attenuation of their exposures to EMF.

## Type 3&4 patients.

Some patients have distressing symptoms associated with low level EMF exposures or attributed to electrical equipment, but on clinical and/or laboratory grounds their symptoms cannot be due to EMF.

These patients need to be diagnosed, their fears of EMF managed, and other diagnoses considered and treated.

De-conditioning techniques may be appropriate for some with phobias.

## Clinical approach.

History taking is key

- requires good medical knowledge
  - + familiarity with ELF/RFR
- physical examination
- no blood tests validated

## Provocation Tests.

Provocation tests need to be designed so as to avoid false negative and positive results.

This requires consideration of:

- type of tests
- exposure time
- 'washout' times
- number of tests for statistical confidence
- blinding
- ethics

There is no gold standard for diagnosis of EMF sensitivity.

Therefore the sensitivity and specificity of provocation tests is unknown and hence the results should be interpreted in conjunction with the total clinical picture.

## Case Definition:

In view of the “spectrum of cases” the case definition of “sensitivity to EMF” needs to be refined so only carefully defined cases are entered into research or epidemiological studies.

Patients should be carefully assessed by an experienced physician and relevant laboratory studies used to form a diagnosis of sensitivity.

Relying on symptom complexes is not likely to be accurate or useful.

# Mechanisms

Peripheral nerve mechanisms as well as central nervous system mechanisms should be considered when studying EMF sensitivity.

## Terminology:

“Electromagnetic Hyper-Sensitivity (EHS)”

Hyper-sensitive is a medically meaningless term and likely to create scepticism within the medical profession to such patients.

It should be replaced by terms such as “EMF sensitive” or “EMF susceptible” or “symptoms at low level EMF exposures”.

