Minocycline and public misinformation

The potential role of minocycline in limiting neurological stroke damage is a widely studied arena, as evident by the numerous studies conducted on the topic and the implications of these findings are widely circulated in the scientific and public community using the print and broadcast media. But, it is highly unlikely that the common media would religiously reflect the findings based on the scientific research as potentiated by the ‘ knowledge gap’ that exists between them. In the light of this statement, there is a general aim to investigate the “ knowledge gaps” that may have been loss from information transfer of the technical work to that of the more popular broad print media.

The Recent Study Conducted on Minocycline

Minocycline, a tetracycline derivative is more popular for its an anti-inflammatory activity rather than its antibiotic effect. Minocycline alleviates the blood brain barrier disruption by decreasing the activity of microglia and metalloproteinase, reduction of edema and hemorrhage and reduce ischemia. The specificity of mitocycline as inhibitor of microglial activity by limiting p38-mitogen-activated protein kinase makes it a potential drug for neurological disorders.

Lampl et al. (2007) conducted an open label, evaluator blinded study on the monocycline treatment in acute stroke. This scientific approach diverted from the normal “ animal models” and the “ in vivo and the in vitro approach” classic method of studying drug medication effect by using actual human models. One hundred fifty two stroke patients were used for the study; 74 received minocycline treatment [(200 mg/day/5 days; start: 6-24 hr after stroke onset)] and 77 received placebo. The NIH Stroke Scale

(NIHSS), modified Rankin Scale (mRS) and Barthel index were assessed for day 7, 30 and 90 (7 and 90 for NIHSS). Data analysis (covariance and two tailed t-test) were carried out using SPSS statistical analysis software.

Results indicate that there was significant reduction NIHSS score at day 90 for monocycline patients compared that of the placebo patients. The reduction was apparent from baseline up to last day of treatment. Barthel index was significantly reduced at day 7 till the end of the treatment and mRS difference started at day 2 onwards. Covariance (co-variance: age, presence of peptic ulcer, angiotensin converting enzyme inhibitor (ACEI) , sulfonylurea(SU) were performed again for NHSS test and results show significant difference between the groups with mean difference increase for covariates.

The study indicates that the administration of minocycline at acute stage of stroke using five day treatment therapeutic onset window of 24 hr is effective in alleviating stroke damages. The “ 24 hr therapeutic onset” is based on results of previous studies stating that edema peaks at 24 to 48 hr following ischemia and inhibition at this timescale of apoptopic pathway is most effective. The limitations of the study are the six hr post-stroke administration, the oral medication, and small sampling units. Confirmation is still needed for this study.

The Public Mis-Conveyance of the Minocycline Efficacy

Last October 27, 2007, Thomas H. Maugh II of Los Angeles Times wrote “[Minocycline] taken within 24 hours, the drug is found to help reduce disabling effects in a patient’s body and brain.”

Thomas H. Maugh based his article on the aforementioned study above. However there are discrepancies that can be found between the article and the actual study which he allegedly used as the fountain of information on minocycline efficiency. First, he intimated that the drug should be administered within the first three hours. He also forgot to mention that the dosage administered was 200 mg. There was nothing in the journal that said that the drug must be administered at within 3 hr. In fact, the therapeutic window indicated in the scientific journal was “ within 24 hr” and the experimental method involved “ six hr post stroke”.

Second, he elicited the “ secondary” opinion from the scientific community specifically Dr. Steven Pacia of Lenox Hospital, Dr. John Marler of National Institute of Neurological Disorders and Stroke and Dr. Raymond Swanson of University of California. There is nothing wrong with eliciting opinions from known field experts on neurology. But the fact is that he should have elicited ‘ primary’ source of information from the Israeli scientists and not from those who are not really involved the conducted study.

Maugh also wrote that subjects for the study excluded “ those who had already shown signs of recovery.” There was no line on the methodology of the paper mentioning this. He also failed to indicated chronic renalfailureas a category in the exclusion of study. (This is very important since there is strong association of inefficacy of oral administration in chronic renal patients). He also wrote that Lampl said that the improvement was apparent within a week. It is a misnomer of information; there was ‘ significant’ improvement from Day 90 and not Day 7. He also wrote that the minocycline

receivers did ‘ 4x’ times better. He forgot to mention if at what scale this 4x is. Is it from the baseline or is it a comparison to the placebo group?

Lampl’s group cited that the study must be performed on a larger scale to attest its efficacy. Maugh’s misnomers and some information deletions may have mislead the reader into believing that the minocycline is proven and tested as effective. Healthinformation to the public should be delivered as precise as possible. Journalist should be more careful about what they write because they are open to misinterpretation by the public.

What would happen if a desperate stroke patient took this information seriously and drank more than 200 mg per day? Results are inconclusive on this. However, it should be deeply noted that, in the end, the public is the one who suffers from this misinformation.

Works Cited

- Lampl, Y., Boaz, M. Gilad, R., M. Loberboym, Dabby, R., Rapoport, A., Anca-hershowitz, M., and M. Sadeh. “ Minocycline Treatment in Acute Stroke.” Neurology. 1609 (2007): 1404-1410.
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