SUMMARY AND CONCLUSION

Magnetic resonance spectroscopy (MRS) is a non-invasive technique for measuring the biochemical content of living tissues that can be performed on most 1.5-T clinical MR equipment. This technique provides metabolic information complementary to the anatomical changes found in radiological examinations.

The concept of MR spectroscopy depends on chemical shift of resonance frequency of nuclei placed in a strong magnetic field. As the magnetic field affecting the proton is also dependent upon small magnetic fields generated by adjacent encircling electrons, the ultimate resonance frequency of protons will be shifted somewhat depending on the number and distance of the adjacent electron clouds. MR spectroscopy detects these shifts.

Proton MR Spectroscopy of the brain detects resonance peaks related to myoinositol, choline, creatine, NAA, glutamate, and lactate.

The spectral pattern of intracranial tumors may vary according to histology and malignancy grade; however, the classical features include reduction of NAA and NAA/Cr ratio, decreased Cr and elevated Cho levels. Lactate peak may be seen and is directly related to tumor grade. Spectroscopy may be able to asses tumor progression, therapeutic response, differentiate between recurrent tumor and radiation necrosis, and indicating the ideal site for biopsy.

A characteristic spectral pattern is observed inside the intracranial abscess cavity in which lactate and amino acids dominate, distinguishing them from cystic and necrotic brain neoplasms.

It is possible to differentiate tuberculous abscesses from pyogenic abscesses by using in vivo MR spectroscopy, which could be of value in influencing the management of such cases.

Proton MRS is a complementary examination that can, enable early diagnosis, asses the severity and prognosis of acute infarction. An acute infarction has a spectrum characterized by early development of a lactate peak. Very soon after this, the NAA peak begins to decrease. With time the amount of lactate decreases, however NAA never returns to normal.

MR spectroscopy can be helpful in assessing patients with AIDS, seizures, and metabolic brain diseases.

So in conclusion, ^{1}HMR-spectroscopy plays a diagnostic and prognostic role in focal lesions of the brain. It also provides information about physiologic and metabolic status of tissue, thus can be used to monitor disease process and response to therapy.