Take-home message

- Globally, an estimated number of 422 million adults lived with diabetes in 2014.
- Type 2 diabetes usually occurs from the age of 40.
- Symptoms of type 2 diabetes may not develop for a very long time.
- Type 2 diabetes could accumulate more iron and lead to neuronal death.

Complications

- In the long term, can affect the heart, blood vessels, eyes, kidneys and nerves.
- Renal failure and iron overload are frequent consequences of type 2 diabetes.
- Brain iron overload could lead to neurologic disorder and dementia.

Possible therapy

- Regular glucose monitoring.
- Food precautions, physical activity.
- Blood pressure and lipid monitoring to reduce cardiovascular risks and other complications.

In Olea Sphere®?

In MRI, T2 * and R2 * are sensitive markers of the iron content in tissue (Ref. 1). The quantitative study of T2 * and R2 * in Olea Sphere® makes it possible to estimate iron loading in the brain. Thus, cognitive dysfunctions in diabetes type 2 patient may be a marker of iron overload in the brain (Ref. 2).

An MRI-acquired 8-echo gradient echo sequence will produce T2 * and R2 * maps with the Relaxometry plugin. In the Analysis plugin, «Regions of Interest» (ROI) can be drawn on target regions. Olea Sphere® makes the use of several ROIs possible on several slices, thus displaying the R2* (or T2*) curves on the same graph. This ensures optimal visualization for a radiologist.

Sources:

- https://fr.statista.com/statistiques/560006/nombre-de-cas-de-diabete-de-type-2-entre-2007-et-2020/
- http://www.controle-diabete.fr/quest-ce-que-le-diabete.html
- http://www.passeportsante.net/fr/Maux/Problemes/Fiche.aspx?doc=diabete_type2_pm
- V.A. // M.F. // A.M. // P.M. // S.F. N° 12 - March 2017

Did You Know?

Brain Iron Overload in Type 2 Diabetes

In Olea Sphere®?

In MRI, T2 * and R2 * are sensitive markers of the iron content in tissue (Ref. 1). The quantitative study of T2 * and R2 * in Olea Sphere® makes it possible to estimate iron loading in the brain. Thus, cognitive dysfunctions in diabetes type 2 patient may be a marker of iron overload in the brain (Ref. 2).

An MRI-acquired 8-echo gradient echo sequence will produce T2 * and R2 * maps with the Relaxometry plugin. In the Analysis plugin, «Regions of Interest» (ROI) can be drawn on target regions. Olea Sphere® makes the use of several ROIs possible on several slices, thus displaying the R2* (or T2*) curves on the same graph. This ensures optimal visualization for a radiologist.