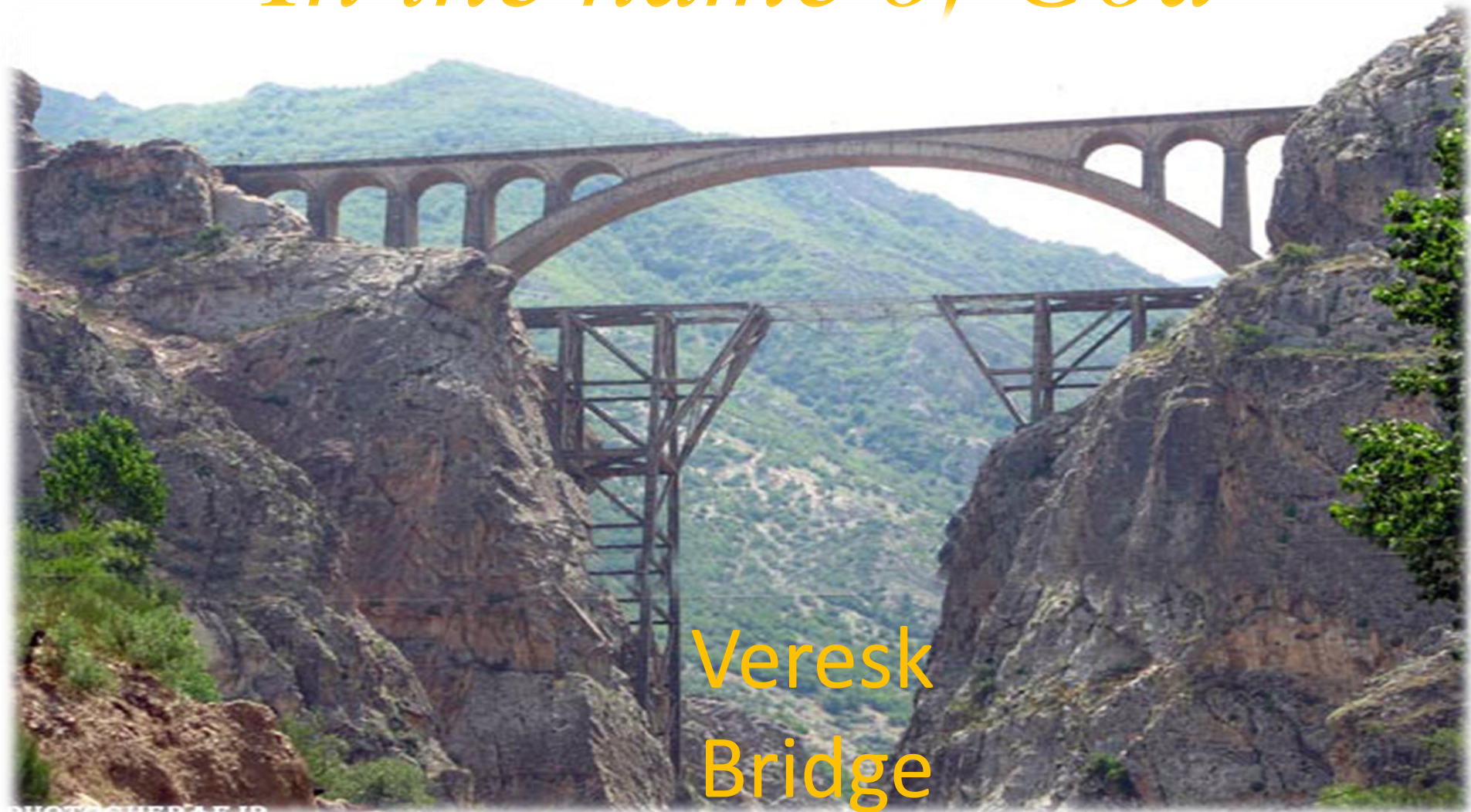


In the name of God



Veresk
Bridge

Plasmapheresis, as a Treatment of Asparaginase Induced Hypertriglyceridemia in Acute Lymphoblastic Leukemia

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Asparaginase

- **L-asparaginase, is an important component of therapy for acute lymphoblastic leukaemia (ALL) in children, inhibits protein synthesis.**
- **It is produced by E.Coli and Erwinia Enterobacter.**



Asparaginase side effects

- Allergic reaction
 - Coagulopathies
 - Encephalopathy
 - Seizures
 - Pancreatitis
 - Hepatotoxicity
 - Hypoglycemia
 - Hyperglycemia
 - **Hyperlipidemia**
- 



Hyperlipidemia

- All of above mentioned side effects are **familiar** to Pediatric Oncologists.
- Conversely, the possibility of **therapy-induced** hyperlipidaemia and **its treatment** generally is not appreciated.
- **Our study was about** the this side effect and its treatment.

Methods

Our study was carried out between **October 2008 to April 2019** including **165** patients undergoing chemotherapy at a teaching children's hospital in Babol, Iran. Patients were treated with anti-leukaemic agents according to the protocols for **standard-risk** and **high-risk** ALL.



Methods

- For patients **biochemical markers and Lipid profile** were checked during the induction phase chemotherapy.
- Lipid profile of patients was recorded.



Results

- In **all patients**, TG and cholesterol levels were **normal** prior to treatment.
- During therapy, **146 patients** (88.4%) patients had **normal** range of TG and cholesterol .



Results

- ➡ **Sixteen** (9.6%) patients had TG and cholesterol levels in the range of **201- 600 mg/dl.**
- ➡ **Eight** (4.8%) patients had TG and cholesterol in the range of **601-1000 mg/dl.**



Results

- ➡ **Five** patients (3%) experienced marked hyperlipidaemia (TG and cholesterol levels > 1000mg/dl).
- ➡ One patient **died**.



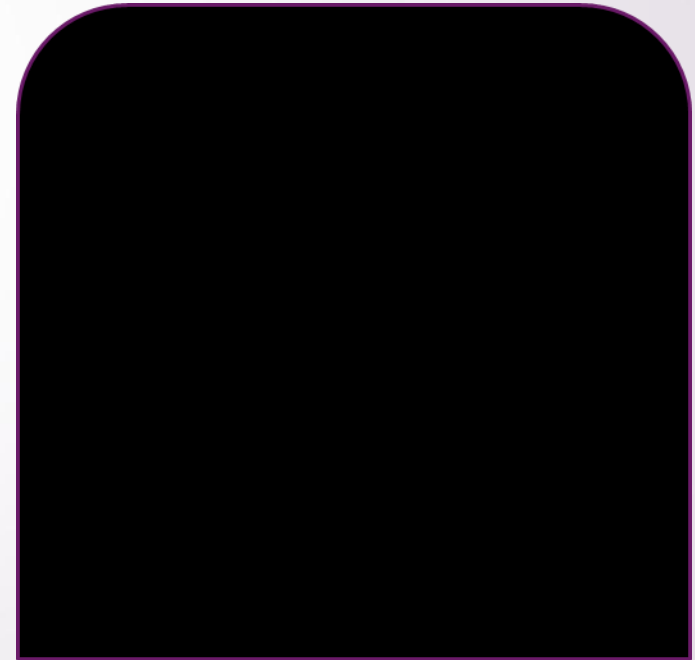
Results

- ➡ **Two patients** who couldn't do plasmapheresis have problem in **walking** and liver **cirrhosis** and **diabetes**.
- ➡ **For two patients** plasmapheresis was done. They have **no problem** now.

First Patient

- ➡ **One day, in the morning after 13 days of induction phase we noticed that the patient could not move her hands and feet.**
- ➡ **She died .**

TG and Ch> 3000



Second Patient

TG and Ch> 3000

- She was **10 month** at the time of diagnosis.
- One day, in the morning, after **15 days** of induction phase, her mother with embarrassment told "**Milk went into the blood of Armita**"
- Plasmapheresis **was not done**.
- She is **8 years** old now.
- She is **diabetic** and **some degree cirrhotic**.

Third Patient

TG and Ch > 3000

- One day, in the morning, after **13 days** of induction phase in the **routine check** **TG** and Ch > 3000 mg/dl.
- He was **9 years** old.
- Plasmapheresis **was not** done.
- He is **13 years** old now.
- He has some problem in **walking**.

Forth Patient

TG and Ch>4000

- One day, in the morning after **18 days of induction.**
- The patient's mother told that her **daughter didn't sleep last night** she was very **irritable**, couldn't walk.
- TG and Ch were **600-700 mg/dl.**
- Problem continued to **second day.**
- TG and CH were **>4000 mg/dl.**
- Oncaspar that used was manufactured by **Austrish.**
- Three times **plasmapheresis** were done.
- She has **no problem** now.
- Her age is 10.

TG and Ch> 4000

Fifth Patient

TG and Ch>1500

- The history was the **same as the last patient.**
- He has **no problem now.**

TG and Ch> 1500



Conclusion:

- ➡ **Severe hyperlipidemia** may be the cause of some **morbidity** and **mortality** in children receiving asparaginase.



Conclusion:

- ➡ **Asparaginase-induced hyperlipidemia** should be **monitored** in all ALL patients during the induction phase of treatment.

Conclusion:

- ➡ **Plasmapheresis** should be done in the treatment of asparaginase induced hypertriglyceridemia (**TG>1000mg/dl**) in ALL, although TG and Chol rapidly dropped **during 3-7 days** after discontinuing asparaginase and steroids, but **sequel of hyperlipidemeia** may persist.

THANKS FOR
YOUR
ATTENTION

