Sclerotherapy Using the Venom of Death Stalker Scorpion (*Leiurus Quinquestriatus*) as a Treatment for Aneurysmal Bone Cyst (ABCs).

Industrial Projects (SEM_302)

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Introduction

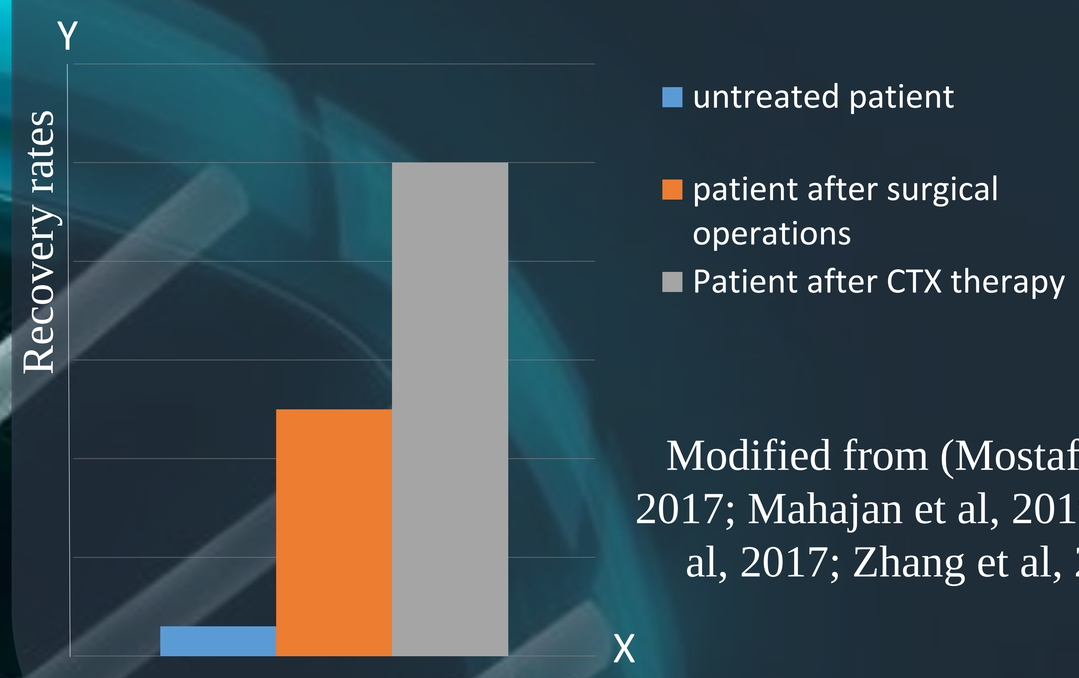
According to **WHO** aneurysmal bone cysts (ABCs) is a tumor that can cause Variety of symptoms like bone fractures, growth disturbances, recurrence, nerve compression and joint damage can occur in any bone, Approximately 63% of cases of ABC (aneurysmal bone cyst) have recurrent rearrangements of chromosome 17p13.2, specifically in the USP6 (ubiquitin-specific protease 6). These cysts affect males and females equally they are mostly common in the 2nd decade of life, with about 60-70% of cases occurring before age 20. This disease has been studied in Egypt since 2005 on several patients where it was found that's most of them resorted to surgical operations **(Mostafa et al, 2017)**. The currently used treatment for (ABCs) is surgical operations, but it has been discovered that using the venom of death stalker scorpion (*Leiurus Quinquestriatus*) can effectively treat (ABCs) **(Dardevet et al, 2015)**. The approach is that by Sclerotherapy method without the need of expensive and repetitive surgical operations, it's possible to inject a needle through the fragile layer of bone which has been formed due to this disease in a way to avoid surgical operations with mere effective treatment that last longer with no Recurrence.

Methodology

1. Venom extraction using the electrical stimulation techniques and (RP-HPLC) combined with (SPE)
2. Elute chlorotoxin from SPE column and Concentrate chlorotoxin solution using a vacuum concentrator.
3. *In vivo* sclerotherapy on mice through the fragile layer of bone
4. Using a small-gauge needle, inject chlorotoxin solution into blood vessel being targeted
5. Monitor the results using MRI and X-ray

Expected Outcome

It's expected that chlorotoxin will show higher efficiency on ABCs patients more than the current solutions due to it's targeted delivery, anti-tumor effects and ability to shrink tumors



Modified from (Mostafa et al, 2017; Mahajan et al, 2019; Liu et al, 2017; Zhang et al, 2018)

Fig (1) shows the recovery rates rate after of untreated patient, patients after surgical operations and CTX therapy

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Selected References

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