



Artisanry and ultrasound: a salty humor

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Salt is essential to human beings. As it plays a role in keeping a normal extracellular fluid volume in the human body, it is a key element to maintain tissue, as well as metabolic and physiological homeostasis. The origin of the word “salary” is considered to be “salt”, as a Roman soldier got a regular income to buy salt, which was a valuable commodity in ancient Rome. Also, salt was used as a currency at that time.

There is a place filled with such valuable salt called Uyuni Salt Flats (Salar de Uyuni in Spanish) in southwestern Bolivia. It is one of the most famous places with a world-class view, and is the largest salt flat worldwide with more than 10,000 square kilometers, located at 3656 m above sea level. Further, as it has only a 0.5 m height difference between any two points, it may be the flattest area in the world.

I went there a couple of years ago and was overwhelmed by the amazing and breathtaking scenery, like a carpet of snow extending to the horizon. I enjoyed a tour to Uyuni Salt Flats with a female tour guide and a male driver (Figs. 1 and 2). They took me to a small island named Inkawasi with a number of cactus in the middle of the lake. Surprisingly, the driver steered the car correctly from the edge of the lake to the island, in the right direction with no landmarks (almost 40 min drive in the lake with only a salty view). I asked how he knew the right direction to drive without any landmarks. He gave a profound answer to my question: “It is experience. Even if they look the same, same but different view. I know which direction the destination is in.” That is exactly the work of an artisan.

The same is true for an ultrasound. To suspect the presence of hepatic fibrosis with the identification of slight heterogeneity in the liver parenchyma, to recognize a tumor lesion in the cirrhotic liver showing highly heterogeneous parenchyma, and to demonstrate a tiny vessel and measure the blood flow in it involve artisanry. These are based on professional skill and are only possible with experienced hands.

But, is it really true?

Being easily attainable may be essential for the dissemination of ultrasound and to make it more attractive to younger generations. I asked the driver how many years it took him to attain such skill and how difficult it was, and his thought on the training of the next generation of drivers. He looked tired of my persistent questions, and finally he divulged the secret: “To tell the truth, I used this car navigation system! Anyone can drive like me by using this magic system! No need to train and to educate young people!”

Digital technology continues to advance and helps us in any field all through the ages. In the case of ultrasound devices, development based on unceasing effort results in the introduction of lighter and thinner transducers, and improvement of real-time performance, resolution, signal-to-noise ratio, and sensitivity to color signals and microbubbles.

We have planned a special feature titled “Imaging-based diagnosis and management of cirrhosis/portal hypertension”, which includes various studies using basic ultrasound, elastography, endoscopic ultrasound, and artificial intelligence (AI). We believe it provides considerable value to the readers with its inclusion of educational and practical

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Fig. 1 Our car on the salt flats

content. Also, it is highly expected that these advancements will make ultrasound much more attractive to all users, particularly to the younger generation. However, technological development is a slow process, and dramatic changes will not appear suddenly. Let's follow the changes over time while continuing to pass on traditional veteran-related ultrasound skills until AI technology might replace operator skill in the future.

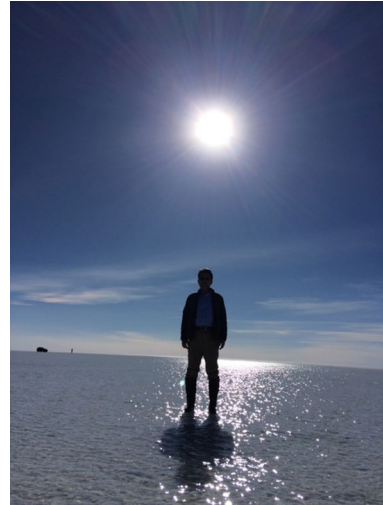


Fig. 2 The author (HM) standing on the flats (the area was covered with salty water)

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