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Commentary

The Use of Ultrasound in Detecting Urogenital Schistosomiasis

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Scientists have been interested in the interior of the human body for millennia. Effectively, the history of ancient anatomy [1] shows that: (i) in Egypt, the study of this science began at least as early as 1600 BC, the date of "Edwin Smith Surgical Papyrus" where kidneys, uterus and bladder, amongst others, were recognized, and that the blood vessels were known to emanate from the heart [1]; (ii) the first use of human cadavers for anatomical research occurred later in the 4th Century BCE, when Herophilos and Erasistratus gained permission to perform live dissections, or vivisections, on : criminals in Alexandria under the auspices of the Ptolemaic Dynasty. Herophilos was the first physician to dissect human bodies and he is considered to be the founder of Anatomy. With the passage of time, new technologies were being created in different scientific disciplines and were also used in other areas. An example is Sonography: (i) in 1942, the neurologist Karl Dussik was credited with the first use of sonography for medical diagnosis; (ii) in 1949–1951, Douglas Howry and Joseph Holmes, from the University of Colorado, were some of the leading pioneers of B-mode ultrasound equipment, including the 2D B-mode linear compound scanner, and John Reid and John Wild invented a hand-held B- mode device to detected breast tumors; (iii) in 1958, Ian Donald incorporated this in the obstetrics and gynaecology field of medicine; (iv) in the 1970s many developments occurred, including the continuous wave Doppler spectral and color Doppler ultrasound instruments; (v) in the 1980s, K. Baba of the University of Tokyo developed 3D ultrasound technology and captured three- dimensional images of a fetus in 1986; (vi) in the 1990s, starting in 1980s ultrasound technology became more sophisticated with improved image quality and 3 D imaging capabilities These improvements continued into the 1990s with the adaption of 4 D (real time) capabilities. Ultrasound guided biopsies (endoscopic ultrasounds) also began in the 1990s; (vii) in the 2000s, the medical ultrasound technologies are continuously evolving.

Another article [2] on "the history of sonographers" related also that since the early days of medicine, there has been a great desire to "see" inside the body. This is what drove Roentgen to develop X rays in 1895, Helmholtz the ophthalmoscope in 1851, Garcia the laryngoscope in 1854, and Nitze the cystoscope in 1876.

Sound was first applied to the human body through auscultation in 1761 and the stethoscope in 1819, and interpreting these sounds required imagination, as did interpreting the early sonographic images.

On sonography in obstetrics and gynaecology [3], commented that the history of sonography and gynaecology dates from the classic 1958 Lancet paper of Ian Donald and his team from Glasgow. On the other hand, fifty years on it is impossible to conceive of practicing obstetrics and gyanaecology without one of the many forms of ultrasound available today.

Concerning sonographers, the need of educate and elevate the level of competency was discussed as early as 1969 by those who founded the American society ASUTS. The society needed to establish a credentialing method, thus an Examination Committee was formed, which in 1975 became the American Registry of Diagnostic Medical Sonoygraphers (ARDMS). The work of these two key Committees would become the centerpiece of activities for many years [4].

As to urogenital schistosomiasis, which etiological agent is the digenetic trematode *Schistosoma haematobium*, that is recorded in Africa, the Middle East, and in Corsica (France) [5]. S. *haematobium* had been recorded in Portugal, with several foci occurring in the Algarve - southern Portugal [6, 7] and more recently, the record of a new locality for intermediate hosts of S. *haematobium* underlines the risk of expansion of this parasite in the European continent [8, 9]. The adults, female and male, are elongated and superficially resemble roundworms, what is an adaptation to their habitat - inside blood vessels, and oviposition normally occurs in around the vesical plexus, and occasionally in the rectal region, the mesenteric portal system and ectopic sites. The eggs have a shell within prominent terminal spine, that is responsible by haematuria observed in the patients, and the its presence in the different part of the body results in a variety of lesions [10] In 1996 and 2000 [11, 12] considering the importance of the ultrasonography, were published practical guides to the standardized use of schistosomiasis for assessment schistosomiasis related morbidity. More recently in [13] the authors review the use of ultrasound to assess the morbidity due to schistosomiasis with emphasis one easy, quick and reproducible ways that can be used in the field.

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Here we go give three examples of the use of ultrasounds in studies on urogenital schistosomiasis in Angolan people:

(1) - In a study [14] of primary sterility in Angolan women which biopsy of the bladder wall had revealed calcified S. *haematobium* ova, the ultrasonographic study showed bilateral upper urinary track obstruction, and hypertrophy and irregularity of the bladder wall.

(2) - In a study [15], in an Angolan patient which prostatic gland biopsy shows calcified eggs of S *haematobium*, the prostate ultrasonography shows a heterogeneous structure with an irregular and nodular capsule.

(3) - In a study [16] carried out in 104 Angolan patients, the ultrasonographic examination showed urinary changes, namely hyperechogenicitis of the bladder wall (in 55.8%), bladder masses (in 23.1%), and upper urinary tract obstruction (in 54.8%).

In conclusion, it is demonstrated that urogenital schistosomiasis is a serious problem in the human health, as much as in its normal and ectopic localizations. Then, to avoid or at least to attenuate this situation it is necessary: (1) that urogenital schistosomiasis is included in the group of priority disease to be controlled and in training of people in the health services, concerning its diagnostic and treatment; (2) health education programs have to implemented with the objective of to explain the population on the conducts to adopt for avoid the infection by *S haematobium*; (3) that the diagnostic is made in the first time of the infection; (4) the use of ultrasonography in the diagnostic of schistosomiasis have to implemented in all health services (hospitals, health centers, etc).

Finally, according to [17] "ultrasonography is a major imaging tool in the diagnosis of schistosomiasis. Its ability to provide direct information about lesions in target organs, their pattern and regression, after treatment makes it a valuable imaging modality. Most importantly, it is inexpensive, non- invasive, radiation-free and portable".

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