

## History of Medicine

### Interventional Physiology on the Stomach of a Live Lion: Aḥmad ibn Abi al-Ash`ath (959 AD)

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The recent article by Amjad Hussain<sup>1</sup> reminded me of Aḥmad ibn Abi al-Ash`ath (d c 975 AD) [‘Ash`ath means disheveled], the famous old physician from Mosul, Iraq, who was also a great and wise teacher and the renowned author of several medical books. He described the physiology of the stomach in a live lion in his book *al-Qāḍī wa al-Muqtaḍī*, which he finished writing in April 959 AD at the Castle of Barqa in Armenia.<sup>2</sup> A manuscript fragment of *al-Qāḍī wa al-Muqtaḍī* is preserved in the British Museum (Supplement 786).<sup>2,3</sup> I have a photographic copy of this manuscript in my library.<sup>4</sup> Ibn Abi Uṣaybi`a in 1270 AD quoted the section on gastric physiology<sup>2</sup> (figure). An English rendition of this very interesting quote follows:

When food enters the stomach, especially when it is plentiful, the stomach dilates and its layers get stretched; I observed this in a live lion which I dissected in the presence of Prince Ghadanfar [Al-Ḥamadāni, the governor of Mosul, 939-979 AD]. Some onlookers thought the stomach was rather small, so I proceeded to pour water in the lion’s mouth and continued to pour jug after jug in its throat; and we counted until the stomach filled up with about 40 *raṭl* [equivalent to 18 liters]. The inner layer of the distended

stomach became as smooth as the external peritoneal layer. I then cut open the stomach and let the water out. The stomach shrank and I could see the pylorus. God is my witness.

This sounds like a pretty heroic procedure that, to our knowledge, has no parallel in the annals of medical history. To borrow a term from röntgenology, one could say that this is real interventional anatomy-physiology at its best. By initiating one of the first experimental events in gastric physiology, the observation of the physiology of the stomach in a live lion in 959, Aḥmad ibn Abi al-Ash`ath preceded William Beaumont († 1853) by almost 900 years. He should be given proper credit for his truly pioneering work

#### References

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قال ابن أبي الأشعث بعد ذلك أن الغذاء إذا حصل في المعدة و هو كثير الكمية تمددت تمدداً بسيطاً  
سائر غشونها كما رأيت ذلك في سبع شرحته حياً بحضرة الأمير الغضنفر و قد استصغر بعض  
الحاضرين معدته فتقدمت بصب الماء في فيه فما زلنا نصب دورقاً بعد آخر حتى عدنا من  
الدوارق عدداً كان مقدار ما حوت نحو أربعين رطلاً ماء فنظرت إذ ذاك إلى الطبقة الداخلة و قد  
امتدت حتى صار لها سطح مستو ليس بدون استواء الخارج ثم شققها فلما اجتمعت عند خروج  
الماء منها عاد غشون الداخلة و البواب يشهد الله في جميع ذلك لا يرسل نفسه

Figure. A transcript of the relevant passage from *al-Qāḍī wa al-Muqtaḍī* as quoted in reference 2.