

### **Fasting in contrast enhanced CT studies: Mandatory or Myth?**

Contrast enhanced computerized tomogram (CECT) is the most common worldwide cross sectional imaging used in radiology services. In USA, about 40 million CECT studies are performed each year.<sup>1</sup> Over the last many decades, pre-procedural fasting for CT prior to intravenous administration of iodinated contrast medium (ICM) has been considered a common medical practice.<sup>2</sup> The prime reason of fasting prior to CECT is to protect the supine patient from pulmonary aspiration of gastrointestinal contents during delivery of intravenous, high-osmolar ionic contrast agent which has been associated with significant emetic responses.<sup>3</sup> Another reason for fasting prior to CECT was understanding that contrast related nausea and vomiting would occur more often with full-stomach.<sup>4</sup> It was also believed that a full stomach would interfere with transit of oral contrast and also gastric food content could mimic intraluminal lesions posing diagnostic challenge.<sup>5</sup> In current radiology practice, low-osmolar non-ionic contrast has essentially replaced high osmolar ionic contrast agents. Sentinel reason for this switch is significantly lower incidence of adverse emetic responses with non-ionic agents.<sup>6</sup> Studies have also shown that fasting in patients who had CT with non-ionic agents has increased the incidence of nausea and vomiting.<sup>7</sup> Another study has shown that fasting longer than 3 h lowers gastric pH level which increased the risk for aspiration pneumonitis.<sup>8</sup> However, despite of these evidences, many diagnostic services worldwide continue the practice of fasting (4<sup>th</sup> to overnight) prior to contrast-enhanced CT. In 2012, a multinational survey reported highly variable fasting policies between countries and even between hospitals within the same country, ranging from no fasting to overnight fasting.<sup>9</sup>

Considering the possible negative impact associated with fasting and potential benefits of not adopting fasting orders, the European Society of Urogenital Radiology (ESUR)<sup>10</sup> and American College of Radiology (ACR) guidelines clarified that fasting was not recommended prior to routine intravenous iodinated contrast materials.<sup>11</sup> In a recently published randomized controlled trial, withholding fasting prior to CECT was not associated with increased incidence of nausea, vomiting or aspiration pneumonitis.<sup>12</sup>

Another recently published study upon 127,200 patients, unrestricted food ingestion was not found to increase overall risk of nausea, vomiting and adverse drug reaction (ADR).<sup>13</sup> In subgroup of patients with hypertension, injection dose >100 ml and rate >5 ml/s, non-fasting was associated with higher incidence of ADR. In another subgroup of patients with prior history of contrast related ADR, non-fasting was associated with significantly reduced incidence of ADR. In another subgroup of patients with prolonged fasting (>10 hr.) and ingestion of >500 ml of water within 1 hour of CECT, higher incidence of ADR was observed.<sup>13</sup>

Unfortunately, the EUSR and ACR guidelines did not specify the types of allowed food or any pertinent attention in specific clinical scenarios or patients subgroups. Based on these evidences, it seems pertinent to have personalized dietary preparation plans and importance of adopting these principles to be issued by relevant societies.

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