

Religious slaughter: A current controversial animal welfare issue

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Implications

- Religious slaughter is a major current animal welfare issue. Significant numbers of Muslim and Jewish people demand meat products from animals killed using practices according to religious requirements.
- There are differences between conventional and religious slaughter practices. Although both methods have been subjected to criticism on animal welfare grounds, religious slaughter has received much recent attention.
- Current concerns about religious slaughter focus on stress of pre-slaughter handling using certain devices, pain and distress that may be felt during and after neck cutting, as well as prolonged times to loss of brain function and death if stunning is not applied.
- Universally agreed correct religious slaughter rules and practices are still under debate, and certification and labeling of meat products remain as other issues to be addressed. Because of the above, moves to minimize welfare problems are under way to improve slaughter practices by providing more training and new regulations.

Key words: Halal, kosher, neck cutting, religious slaughter, Shechita, stunning

Introduction

Religious slaughter methods, required to be applied before meat is deemed consumable for some followers of certain faiths, have continued to be controversial on animal welfare grounds in the last few decades. Discussions have intensified especially with the concomitant increase in Muslim populations in European countries, meat exports into the Middle and Far East, and also consumer concerns and demands in both secular and Muslim groups. Questions about and calls for changes for current practices and legislation have also become more frequent. Objections are mainly focused on the method of neck cutting if no stunning is used and, to some extent, pre- and post-slaughter handling of animals. Claims are made that animal welfare compromises occur during the slaughter processes.

Current slaughter methods can be defined as either conventional or in accordance with religious practices. Halal (Muslim) and Shechita (Jewish method) are the principle religious techniques subject to much debate. A

European Commission funded project, DIALREL, has recently disseminated information relating to religious slaughter (DIALREL, 2009) and the most recent comprehensive review on religious slaughter has been commissioned by the English Beef and Lamb Executive (EBLEX; Anil, 2012). In-depth information and critical reviews on religious slaughter can also be found in publications by Anil and Lambooi (2009), Levinger (1995), Al-Masri (1989), and Rosen (2004).

Although legislation (Ferrari and Bottoni, 2010) usually covers conventional methods, exemptions for religious slaughter, particularly whether stunning is used, are in place. In Europe, slaughter without stunning is illegal in several countries (e.g., Sweden, Denmark, Norway, and Switzerland).

Halal Slaughter

The Muslim method, Halal, is based on interpretation of the Koran and the Hadith (the sayings of the prophet Mohammed). Prior to the act of slaughter (Al-Dhabh), pronouncing the name of God (Tasmiyya) is a requirement. Following restraint, slaughter is carried out by a transverse incision of the neck to achieve instant and copious exsanguination. Rapid and maximum blood loss is crucially important because consumption of blood is forbidden. Provision and consumption of meat for Muslim communities is an essential part of the religious life, and certain conditions must be met so that the meat is lawful, Halal, as opposed to Haram. Important requirements include:

- Pigs and carrion are forbidden
- Death must be through blood loss
- Besmele/Tasmiyyah, citing of God's name
- Stunning, if used, must not stop the heart

The debate on deciding the correct rules is still continuing, and a set of standards prepared by the Organization of Islamic Countries (OIC) is under consideration. However, unlike the Jewish Shechita system, no official Halal regulatory authority exists. Consequently, self-appointed certifiers operate, resulting in confusion and low consumer confidence in product authenticity. Issues include different interpretations of rules, lack of audit trails, insufficient slaughterman training, welfare compromises, and hygiene problems (see "reports" in DIALREL, 2009).

The often debated issue is about whether stunning should be acceptable before Halal slaughter. There are three views: i) Those who accept it if conditions are met because the welfare of animals is protected and rules are maintained (Al-Masri, 1989); ii) those who reject the idea because stunning is unnecessary, against religious rules, or creates problems for animals because of perceived painful effects (Katme, 1986); and iii) others who are either not sure or want assurances in both cases. Certain

types of stunning methods such as reversible electrical methods before Halal slaughter have been regularly used for decades in some countries. For example, New Zealand, where stunning is compulsory, has exported Halal meat from animals stunned and killed by Muslim slaughtermen for many years. Poultry slaughter in large numbers also often employs electrical stunning. However, these products are now being objected to by the non-stun lobby groups.

There are also myths about the effects of stunning. These include beliefs that stunning is painful, animals suffer, and blood loss is insufficient if stunning is employed compared with slaughter without stunning. In addition, there is concern that premature death due to heart stopping following stunning prior to exsanguination could occur rendering the carcass unacceptable

Shechita-Jewish Methods

Jews consume beef, veal, mutton, lamb, and poultry, but not pork. These meats must be slaughtered and prepared in accordance with the rabbinical laws. Shechita rules and effects on physiology, meat quality, and animal welfare are available (Zivotofsky, 2009, 2012; Rosen, 2004; Levinger, 1995).

A trained slaughterman, Shocet, appointed by the Shechita Board, makes a transverse cut across the neck using a sharp, special knife (chalaf; Figure 1). The chalaf needs to be inspected for sharpness after each cut. Preslaughter stunning and damage to tissues such as hemorrhages are not accepted. The reasons for rejecting stunning include that the original method is superior, painless, and causes instantaneous insensibility while stunning causes damage to carcasses. Following slaughter, a Jewish Inspector examines the carcass and rejects certain parts (treifa) and defects such as hemorrhages. Following this inspection, the meat is “porged” to remove veins and other forbidden tissues including blood, certain fats known as chailev, and the sciatic nerve (usually both hind legs are removed). As consumption of blood is prohibited, some meat cuts are salted before marketing. Treifa percentages of carcasses can be high. In the UK and possibly elsewhere in Europe, the hindquarter part of the carcass (posterior to the 12th rib) is usually sold to domestic markets because it is tedious and difficult to porge.

It is claimed by its supporters that Shechita is a humane method and death occurs immediately with no adverse effects to animal welfare. Although available scientific findings (Kalweit et al., 1989; Gibson et al., 2009a,b) do not agree with some of these, it is clear that Shechita is a skilled and self-regulated procedure carried out in selected kosher species by highly trained professionals. However, animal welfare concerns still remain as referred to below.

Welfare Concerns

Concerns about religious slaughter focus on three questions:

1. Is there preslaughter stress (Dunn, 1990; Grandin and Regenstein, 1994)?
2. Is the neck incision painful (Gibson et al., 2009a,b)?
3. Is sensibility and consciousness lost quickly enough following exsanguination by neck cutting, or “sticking” (Kalweit et al., 1989; Grandin and Regenstein, 1994; Anil et al., 1995a,b; Rosen, 2004)?

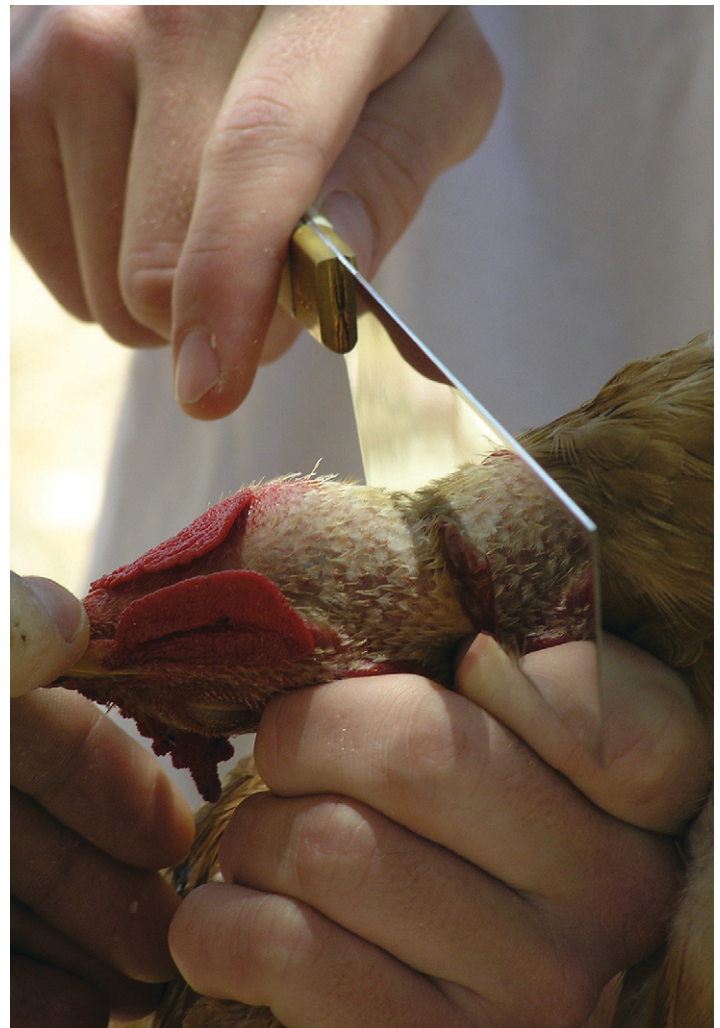


Figure 1. Shechita/Kosher slaughter of a chicken (photo courtesy of Wikipedia/Yofial).

Different designs of cattle restraint pens can be used at abattoirs. The objective is to confine the animal in a pen so that stunning and slaughter can be carried out effectively and safely. Animals usually enter the pen after going through a race. Pens must have gates to close after entry. The race should have smooth curved sides if long as well as sufficient light. Use of prods should be reduced to minimum.

For captive bolt stunning, facilities to present the head for correct stunning at the front would be useful. Some cattle pens are specially constructed for captive bolt, electrical stunning, and/or religious slaughter. Upright and Facomia pen designs have additional features for extra restraint such as belly lift, back push, and chin lift. Facomia pens tilt the animal around 45 degrees. Rotary pens that turn the animal 180 degrees are more stressful and are banned in the UK.

The new impending European Council Regulation, (EC) No 1099/2009, requires a study of cattle restraint systems and a report to be submitted by the end of 2012. Its aim is to establish whether certain optimum types of restraint apparatus exist for cattle as some existing ones may have inherent undue stress factors. Although this development has implications for both conventional as well as religious slaughter, the latter could be more affected. In particular, restraint periods before and after a neck cutting can

be long in some systems. For example, some rotary pens take unduly long to rotate and present cattle for slaughter. Cattle are restrained in pens also aided by additional devices such as a belly push and chin lift. Rotating pens are banned in the UK and USA due to potential stress of rotation. With regard to pre-slaughter handling stress, reported concerns about upright and rotating restraint devices for cattle initiated a European study to be commissioned and completed by the end of this year.

Religious slaughter of sheep can be carried out either using a cradle or a V-type restraining device. In the former case, a specially constructed cradle is used where each individual animal is lifted up, carried, and placed in a horizontal position before neck cutting. After the neck cut is performed, the animal has to be held for a prescribed period (20 and 30 seconds for sheep and cattle, respectively, in the UK).

The second and third questions are related and concern whether stunning is used. The underlying reasons why stunning is compulsory by law in some countries include prevention of animals experiencing pain during the cut and being distressed before death; hence the emphasis on humanness of the technique. However, the original and historical advantage of stunning an animal before slaughter was to immobilize or control movements. Supporters of religious slaughter methods that reject preslaughter stunning believe that their particular method is humane.

Shechita precludes preslaughter stunning, whereas for Halal, providing the animal does not die, it is acceptable in some countries (e.g., Turkey and Malaysia). The issue of whether the neck cut is painful has received much controversy and discussion. There are two camps about the pain issue: Those who think the cut is quick and painless, and therefore slaughter without stunning can be effective and acceptable, and others who argue that varying degrees of severe pain is inevitable. Scientific methods to measure “pain” during neck cutting have recently improved, and New Zealand researchers, using neurophysiologic techniques, showed neck cutting to be noxious (Gibson et al., 2009a,b), particularly when blood vessels are severed. Debate continues nevertheless, claiming that the cut did not simulate original Shechita or the knife was not long enough. Older arguments by Rosen (2004) and Levinger (1995) stating that the Shechita cut is painless because use of the sharp knife causes no pain and brain function is lost immediately still get support. While the potential for pain perception exists, other risk factors such as changes in direction of the cut, multiple cuts or performance of backup cuts, inadequately sharpened blades, thick necks, skin folds, and insufficient tension of the neck could increase chances of increased pain perception.

Another concern is the delayed time to loss of consciousness after the neck cut. Following exsanguination, it is imperative that consciousness is lost rapidly. Length of time to loss of consciousness depends on a number of factors such as the method of restraint, quality of the cut, as well as species differences. Time to loss of brain function has been studied by various researchers who examined electrical activity of the brain such as electroencephalogram (EEG)-evoked responses as well as animal reactions and reflexes. These reports revealed variations in the above-measured parameters and durations. There is evidence, however, that in cattle, neck cutting can result in carotid occlusions and delay time to loss of consciousness (Anil et al., 1995a,b; Gregory et al., 2011).

It is generally agreed that grand mal epilepsy, quiescent period, amplitude less than 10% of the pre-stun recording in the EEG, and absence of evoked responses are indicative of unconsciousness. However, presence of evoked potentials does not necessarily imply consciousness because visual-evoked potentials can be recorded in animals under anesthesia

(EFSA, 2004). Kalweit et al. (1989) recorded visual and somatosensory responses after Shechita neck cutting without stunning in cattle and compared responses after captive bolt stunning. In the latter cases, both recorded responses were lost immediately, whereas after neck cutting without stunning in the former, responses, although gradually being reduced in amplitude, lasted almost a minute. Therefore, the fact that brain function is not completely lost gives an element of doubt about the presence of sensibility if no stunning is used.

It is claimed that immediate loss of blood pressure after neck cutting results in rapid loss of consciousness due to ischemia reduction of cerebrospinal fluid pressure (Rosen, 2004; Levinger, 1995). In cattle following exsanguination, it takes a certain amount of time for blood loss to reach critical levels. It is estimated that 50% of total blood volume is lost during exsanguination. Anil et al. (2006) found 25% was bled out after 17 seconds. In sheep, however, the time period is much quicker (Anil et al., 2004).

Anatomical differences in cattle can lead to occlusions of the arteries and recovery episodes in blood pressure in calves (Anil et al., 1995b). The brain of ruminants is perfused with blood from a vascular network called “the rete mirabile” that receives branches from the carotid and vertebral arteries. In cattle, extra anastomosis may bring in blood to the rete mirabile and brain sometimes even after exsanguination, whereas in sheep and goats, this is not the case.

Although perfusion of the brain with blood supplied through extra anastomosis is possible and has been demonstrated, it is argued whether this prolonged blood and oxygen availability is sufficient to maintain consciousness. Rosen (2004) claimed that the cerebral blood flow after a neck cut would not be sufficient to supply the brain. Anil et al. (1995a) found that carotid occlusion delayed the time to isoelectric electrocorticogram (ECoG) in calves. In the same study, when carotid occlusion occurred, vertebral artery blood flow was maintained at about 30% of its initial level for up to three minutes, and in some animals, it increased substantially following sticking (bleeding by neck cutting).

Sharpness of the knife and performing a complete uninterrupted cut could influence other factors such as vasoconstriction, clotting, ballooning known also as carotid occlusion, or false aneurysms (Anil et al., 1995a,b). Gregory et al. (2011) found a prevalence of large false aneurysms in 10% of cattle slaughtered by Shechita and Halal with implications for sustained consciousness during religious slaughter in cattle.

Carcass and Meat Quality Effects

It is of utmost importance to expel as much blood as possible to meet religious requirements of Halal and Shechita slaughter. It was often claimed that stunning would adversely affect exsanguination and that neck cutting without stunning improves blood loss. Levinger (1995), in his book on Shechita reviewed experiments in which blood parameters, color, and pH were measured under different slaughter methods (conventional with stunning versus no stunning) and concluded that sticking and blood loss were better after Shechita alone because of the very sharp knife used and efficacy of the cut. However, Anil et al. (2006, 2004) examined exsanguination and compared stunning and slaughter versus Halal slaughter with no stunning in cattle and sheep. No differences were found in both bleed-out rates and total blood loss. Velarde et al. (2003) also previously found a slight increase in blood loss after electrical stunning in lambs, rather than an improvement in bleed out by slaughter without stunning.

Based on existing studies and available results, it is reasonable to suggest that regardless of whether preslaughter stunning is used or not, blood loss is unlikely to be different.

Legal Aspects

In most countries that require preslaughter stunning, there is dispensation for religious slaughter methods. For example, Shechita and Halal may be allowed, but stunning has to be used for all other slaughter within abattoirs. The religious dispensation is allowed on the basis of human rights, which with the exception of one or two countries in Europe, takes precedence over animal welfare. In other countries, cultural rights have been embodied in the human rights legislation, and in the present context, this could complicate interpretation of the scope of the dispensations. The national and international norms such as the OIE (Office International Epizootique) standards and European regulations (European Community, 1993) apply to religious slaughter, with derogations. The DIALREL project has collected legislation documents (Ferrari and Bottoni, 2010) showing existing gaps and differences in requirements. The new amendment to European Community regulation is aimed at bringing in further important changes, for example:

- Individual restraint and checks for recovery in ruminant animals slaughtered without stunning
- A report on restraining bovine animals by inversion
- Ban on hoisting and clamping legs of animals
- Requirement for training slaughtermen

Codes of Practices and Recommendations

The DIALREL project prepared a set of recommendations, available on the DIALREL website (final report), for improved practices to be adopted during religious slaughter. These guidelines cover both scenarios including religious slaughter with and without stunning.

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