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## The use of Kalashnikov (AK-47) in 'Ndrangheta murders: The firearm of the clan.

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### ABSTRACT

'Ndrangheta is a mafia criminal organization, hailing from Calabria, Italy. This organization is able to use any kind of weapon and the choice depends on the type of murder to commit. So, even bazooka have been used when the victims, judges or rival mafia clan boss, travelled by armored cars. Kalashnikov is not only used "normally" to commit mafia ambushes, but often it has been found carbonized with the car used by killers. This act confirm that mafia clan have available vast arsenals of weapons and it is a demonstration of what this organization is able to do. Gunshot wounds cause significant mortality and morbidity. The analysis of the features of injuries makes it possible to establish which kind of weapon has been used. The AK-47 is a selective-fire, gas-operated assault rifle and it uses a long stroke gas system. In order to shoot, who uses a AK-47, inserts a loaded magazine, pulls back and releases the charging handle, and then pulls the trigger. It can be semi-automatic, when the firearm fires only once, or full-automatic, if the rifle continues to fire automatically and cyclically fresh rounds into the chamber. AK-47 rifle bullet injuries present with uncharacteristically large entry wounds and cause complex structural injuries. The consequent trajectory is difficult to predict making regional examination and radiological investigations. Bullets may be retained, leaving no exit wound. We report a case of an AK-47 murder. An autopsy was performed and documented the external lesions. Terminal ballistic reconstructions were carried out. The results of the forensic investigations revealed a mafia matrix in the genesis of the homicide. Kalashnikov is not a frequent weapon, so the wounds are not so common to see in the forensic practice. But, in 'ndrangheta homicides, this firearm is preferred for its high harmful power that ensure a murder "without mistakes" and with devastating consequences on the shot body .

**Keywords:** Forensic sciences, Kalashnikov, Multidisciplinary Approach, autopsy, firearm

**Abbreviations:** MSCT (Multi-Slice Computed Tomography), CT (Computed Tomography).

### 1. Introduction

The 'Ndrangheta, along with Cosa Nostra, Camorra and Sacra Corona Unita falls among the criminal organizations, with a mafia connotation. It originates from Calabria, one of the southern regions of Italy. It has ramifications all over the world. It is considered one of the most dangerous criminal organizations in the world and also among the richest; in fact, it boasts a turnover between 50 and 60 billion euros. Its most "profitable" activity is, of course, drug trafficking. Other illegal activities include the participation in tenders, the conditioning of the electoral vote, kidnappings, usury,

extortion, arms trafficking, the disposal of toxic waste. Already known in the late 1700s, under the Bourbon kingdom, it has developed and rooted more and more throughout the Calabrian territory. Peculiar characteristics of this organization are the existence of family ties between the affiliates and the low number of repentants, a direct consequence of the first characteristic mentioned and also of the oath made before entering the organization.

The 'Ndrangheta is organized according to a well-structured hierarchy. A person becomes "ndranghetista", that is affiliated to this organization in two ways: 1) by birth, as already belonging to a mafia family or 2) by "baptism", that

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Figure 1.



Figure 2.

is through the affiliation rite that binds him to the organization up to death. Throughout its history, the 'Ndrangheta has seen the explosion of various clan wars, some of these characterized by episodes of extreme violence; not all the wars have seen the Calabria region as a place of confrontation, but sometimes, especially because of the widespread diffusion of the 'Ndrangheta, violence has occurred in other Italian regions and even abroad. The clans are equipped with real arsenals and among the most used weapons there is the AK-47 or Kalashnikov. The choice falls on this type of weapon both for its devastating damaging effect and for reliability, in fact it rarely gets into jeopardy.

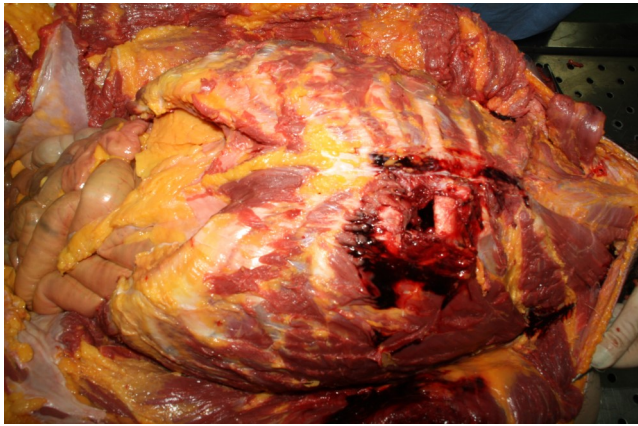
The AK-47 is a gas-fired selective assault rifle, chambered for the 7.62 × 39 mm projectile. It was developed in the Soviet Union by Michail Timofeevič Kalašnikov. In 1949 the weapon was adopted by the Soviet army with the denomination 7.62 mm AK-47. It is considered the most widespread and manageable assault rifle in the world. It is durable and reliable. To shoot, the operator inserts the magazine, pulls and releases the cocking lever and then pulls the trigger. In semi-automatic, the weapon fires a single shot and the trigger must be released in order to fire again. In automatic mode, the firearm shoots cyclically, charging,

triggering and expelling the blows one after the other until the magazine is exhausted or the trigger is released. The gases generated by the shot are partially conveyed through a hole in the upper part of the barrel towards the recoil system, where they push back the piston, which in the retrograde movement pushes the shutter, causing the obturator to withdraw, which in turn expels the cartridge case and takes a new shot back into position thanks to the recovery spring. The system used in the weapon is referred to as "long stroke", as the piston moves backwards for a rather long stroke, physically pushing the shutter-holder back. The distance between the rear sight and the viewfinder in the AK is 378 mm. The sight is adjustable from 100 to 800 meters. The shooter can hit targets at short distances (usually up to 100 m) without any necessary adjustment. The standard version of the weapon uses 7,62 × 39 mm projectiles, with a sprint speed of 715 m / s. The weight of the ammunition is 16.3 g, with a 7.9 g ball. The AK-47 has always been considered a fairly precise weapon. The loader for the AK-47 has a very pronounced curvature that allows easy access to the chamber for the projectiles. The one in use weighs 250 grams (discharge). The weapon can also mount 40 or 75 (drum) rifles commonly used in the RPK light machine gun. There are also variations of 10, 20 or 100 shots. All AK-47 specimens can be fitted with various 40mm hang-up grenade launchers. The standard grenade is the VOG-25 (or VOG-25M) fragmentation, with a lethal radius ranging from 6 to 9 m. In addition to the Soviet Union, the AK-47 (with all its variants and copies) are produced in at least another dozen countries.

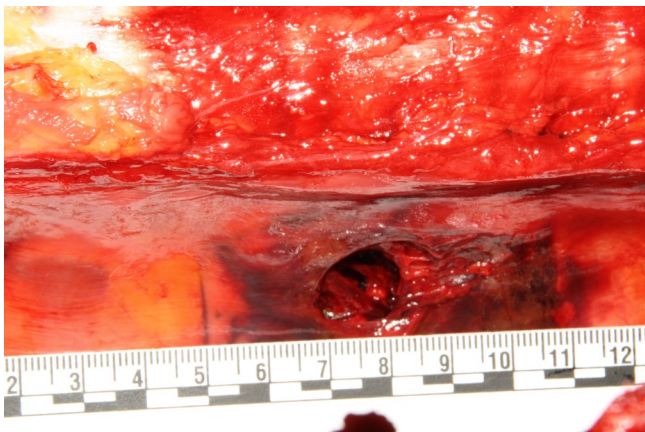
## 2. Case report

We reported a case of young man killed by a Kalashnikov. The corpse was in the prone position. Six holes of a firearm on the body were observed; particularly to the back, chest and left arm. The lesion situated on the chest was the size of 3x2 cm (Figures. 1-2). At the time of inspection the planimetric for ballistic calculations was performed in the following manner: shooting cameras, integrated with the satellite images of the crime scene extrapolated from the website <http://www.bing.com/maps/>; identification of the location of the discovery of the corpse throughout the use of cadastral maps; measurement of the building and the land in front of the building in the crime scene; pads planimetric and 3D views of the crime scene; shoe-pads and biological agents; evidence collection of shells and cartridges found on the ground; location of shell casings and measurement of distances from the site of the discovery of the corpse. The measurements were used by the ballistic engineer to make the vector calculations. On the scene the ballistic elements were collected. An external examination of the body was carried out, and subsequently a MSCT (Multi-Slice Computed Tomography) and autopsy were performed. On the corpse was found a single fatal blow whose trajectory was: 1-rupture of the dorsal vertebrae, 2-laceration of the left





**Figure 3.**



**Figure 4.**

lung with hemorrhage, 3-outbreak of the heart and pericardium and massive hemothorax (Figures.3-4). The ballistic calculations have allowed us to establish that the subject was facing the shooter at first and then, in an attempt to escape, he was back than killer. In the case presented the speed and violence of this firearms have caused an explosion of the heart. These data show the potentially devastating effects of this weapon. Often, these harmful effects make the shooting dynamics reconstruction difficult. For this reason, we underline the importance of multidisciplinary approach in assessment of the murders in these cases. Only a careful evaluation within the inspection and the performance of vector calculations on the crime scene and the corpse allows a reconstruction of the murder and becomes a scientific evidence in the court for obtaining a correct reconstruction of the events.

### 3. Discussion

From the review of the literature of the last 20 years, the few articles describing the injuries caused by this rifle concern war scenarios; the lesions described above all concern the cranio-facial district and the management that

must be put in place in case the subjects hit by the AK-47 projectiles manage to survive. In general, gunshot injuries are responsible for high morbidity and mortality. The extent of the damage depends on many factors and, generally, the highest energy possessed by the blows exploded at close range causes greater damage. The extent of tissue damage depends on internal tearing, tissue compression, and the presence of cavitations along the projectile path. Moreover, the severity of the lesions depends on the possible impact of the projectile with the bones, since it determines the formation of bone fragments which are also responsible for other injuries independent of the insults caused primitively by the projectile. The injuries caused by the Kalashnikov and involving the head and neck are devastating and can even be fatal, causing an instant death. These regions, in fact, contain vital organs in a confined space. The main cause of death, in these cases, is the conspicuous hemorrhage due to the injury of the large vessels. The damage to the tissues is either direct, due to the passage of the projectile, or connected to the kinetic energy transferred to the tissues themselves. Of course, for the evaluation of cases like these, CT (Computed Tomography) becomes essential. In fact, it facilitates the characterization of the vascular lesions of the neck that may include: partial or complete occlusions, pseudo-aneurysms, intima flaps, dissections and arterio-venous fistulas. It also provides additional information regarding cervical soft tissue conditions, respiratory and digestive tract conditions, the vertebral canal and spinal cord. Above all, it provides clarifications on the trajectory followed by the projectile. This last function of the CT is also very important from a medico-legal point of view. The forensic pathologists are, in fact, required to search and find every fragment of the projectile, as well as to establish the possible routes. The AK-47 characteristic is therefore at its capacity to cause direct, but also indirect, injuries due to the great kinetic energy that is transferred to the tissues. Peter A Ongom et al., in their article, report precisely the case of a young African woman hit by a bullet exploded by an AK-47 rifle, which had an atypical entry hole and the bullet was placed at the level of the carotid sheath of the neck [1].

As for the lesions involving the brain, a certain tendency for fragments of the projectiles to migrate into or out of the ventricles, inside the cistern, in the hypsense-lateral cerebral hemispheres and also in the cerebellum is to be found. Besides causing death, the presence of these foreign bodies in the brain can cause abscesses, cerebral-spinal fistulas, post-traumatic epilepsies, hematomas and infections. The mechanisms underlying this healthy phenomenon vary: the softness of the brain tissue, the greater weight of the projectile than the brain tissue and the penetrating dynamics coupled with the pulsatile nature of the cerebral ventricles. Moreover, we must consider the force of gravity that, in the movements of the subject, determines the migration of these fragments in certain sites rather than in others, as evidenced in the report by Richard A. Rammo et al. [2].

Sabri T. Shuker et al., in their work, analyze a series of 12

cases of people hit by stray bullets, exploded in the air to express joy or anger. The analysis concerns the physics, the clinic and the management of these wounds. The lesions affected the cranial-facial district and they are a further demonstration of the devastating force of the AK-47, compared with other weapons used for the same purpose. In fact, it has the highest mortality and morbidity rate probably due to the speed of the projectile, its shape and its center of gravity. The wounds have a vertical or very high incidence angle, even if the kinetic energy is much lower compared to that deriving from a directly exploded projectile. In these cases, the possibility of fatal wounds is very high. In the cases examined in this article, the entrance hole through the skin of the cranial vault and the maxilla-facial region is small; usually it is circular or oblique. In adults, it is much more evident, probably due to the incomplete ossification present at the level of the cranial vault of the children. In cases where there were two holes, the entrance was the level of the skull vault, the bullet then came out at the level of the anterior fossa of the skull, or from the orbit, or from the petrous bone. In the only case of a surviving patient, the projectile was in the maxillo-facial region. These wounds are characterized by less tissue damage, without the classical cavitations, moreover the kinetic energy can be more quickly dissipated in the sinus cavities. When the entry is directly at the level of the middle third of the skeleton of the face, the projectile crosses the skull entirely and exits from the other side. The exit hole resembles that of entry, because the projectile encounters less resistance in the passage through the paranasal cavities and the bone is thinner. In the mandibular wounds comminuted fractures of the cortical bone were found, different from those seen in the entry hole or that affected the bones of the sinus cavities. The projectile can be found at the level of the floor of the mouth or the tissues of the neck [3].

Denise A. Whitfield and Steven J. Portouw report a retinal detachment following the injury caused by an AK-47 rifle. A rebounded projectile had hit the young man, thus it endowed with a lower speed and kinetic energy and the capacity to damage the maxillofacial district severely. The bullet entered at the level of the ethmoid sinus, there were no injuries to the ocular globe, nor was there a direct scleral impact. However, the impact force absorbed by the ocular globe and responsible for the detachment can be derived from the force of the shock wave transmitted. The bullet was indeed found in the near breast [4].

Finally, it must be pointed out that even the savage shots can cause serious and even fatal injuries. Miodrag Zdravkovic et al. they report three cases involving lethal injuries from blank cartridges. These are special ammunitions, used for exercises or even in the theater. 0.76 g of freely poured nitrocellulose gunpowder and of the initial powder charge primer of fulminant. Basically, they are used to simulate gunshot noise. In the manuals the safety distance shown is 20 meters. The injuries are due to the explosion wave of the shot and, if the projectiles are exploded at close

range or in direct contact, they can have the same consequences as normal ammunition. The entry holes are identical. The difference is that the lesions on the skin are exclusively due to the tension generated by the firing gases and not by the power of the bullet. The characteristics of these holes are: shape of the relatively irregular defect, with frequent presence of laceration of the skin that originates from the edge of the wound; burns; the edges and the initial part of the wound canal are dark; there are particles of dust and soot impressed and stratified in the initial part of the wound canal; besides there is the absence of the bruise ring. Even in histology there are no specific characteristics that make it possible to differentiate the two lesions in a clear way. Moreover, again in the case of blows exploded at absolute distance with conventional ammunition, the wound channel is wider towards the inlet hole and described as having a "truncated cone" shape. The specificity of the wound canal caused by the blank cartridge is that the wound channel also has a truncated cone shape, but its narrowest part is towards the entry hole. In addition, there is no exit hole for the loss of power of the exploding gases [5].

#### 4. Concluding Remarks

In conclusion, the choice of AK-47 rifle depends on the will to ensure a crime free of hitches and with fatal outcome for the victim. Gunshots do not always lead to death; this, in fact, depends on the type of weapon chosen. The mafia clans, like 'Ndrangheta, choose this type of weapons to successfully define the homicidal purpose, as well as to have devastating effects on the victims, in order to disfigure them for revenge.

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