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ETHICS CASE

Evaluating the Risks and Benefits of Participation in High-School Football

Commentary by Michael J. O'Brien, MD, and William P. Meehan III, MD

Dr. Gupta is a private practice pediatrician in a small, rural town. As a primary care physician, he is often asked to evaluate children and teenagers for participation in youth sports programs. This means much of his work is dedicated to high school football, one of the mainstays of youth athletics in the region. Dr. Gupta is often happy to serve in this capacity; he has spent much of his career working to prevent child obesity and believes strongly that community sports and fitness are crucial components of healthy lifestyles.

He is asked to evaluate 15-year-old Jesse in preparation for the boy's first season on a junior varsity high school football team. Jesse is accompanied by both of his parents. As Dr. Gupta walks into the examination room, he senses that the atmosphere is tense. After a brief history and pre-participation physical exam, he asks Jesse's mother and father if they have any questions.

Jesse's mother speaks up. "I've read that they've started placing sensors in players' helmets, and they show that a lot of these boys are taking pretty hard hits. They say that concussions are actually more harmful than we knew about back in our day, and that over time all these head injuries could really cause damage to the brain. I'm worried, because Jesse's already had one or two concussions in the past. Should we really let Jesse play football?"

Jesse's father shakes his head and interjects: "Jesse's brothers played high school football, and they got banged up pretty bad, but they're fine. One of them has a scholarship to a good university, and he's still playing football. I played the game myself when I was in school and it taught me a lot of important life skills—skills that served me as a unit leader in the Army and that I still use in running my business. I want Jesse to have the chance to play on a team and learn the value of sportsmanship. More important, I don't want him hanging around after school with these other kids who are doing drugs and getting into trouble."

Dr. Gupta listens carefully to each parent's arguments. He says that he understands Jesse's mother's concerns about the risks of the sport, and he makes a point of acknowledging them. However, he also agrees with Jesse's father that youth sports play an important part in teaching children and teens teamwork, leadership, and healthy lifestyles. He asks the parents to discuss their concerns with each other further, as well as with Jesse, and in the end to decide as a family how they want to

proceed. The parents thank Dr. Gupta for his time, but as they get up to leave the office, he feels they wanted something more from him.

Commentary

In this case, Jesse, a 15-year-old male athlete with a history of one or two prior concussions, wishes to participate in football. Dr. Gupta is asked to perform a pre-participation evaluation. Jesse's mother expresses concerns about her son playing football. Specifically she is worried about the risk of concussions, the cumulative effect of concussions, and the cumulative effect of blows to the head that her son might sustain that do not cause symptoms of concussion (i.e., subconcussive blows). Jesse's father, on the other hand, notes the benefits of participating in football and uses Jesse's brothers as examples of former high school football players who benefited from the experience.

This case illustrates one of the major functions of sports medicine physicians, which is to clear athletes for participation in sports. Although there are benefits to sports participation, there are also risks involved. The risk of injury, especially in collision sports such as American football, directly opposes the benefits to the athlete's health and social well-being. The issue of clearing an athlete for sports participation can be complicated, particularly if the athlete has suffered previous injuries, as Jesse has.

When making a decision to allow or prohibit an athlete from participating in sports, we often turn to central ethical principles to help guide us, such as respect for autonomy, beneficence, nonmaleficence, and justice [1-4]. In the current situation, however, two of these principles are in direct conflict. In order to respect the family's autonomy, Dr. Gupta must allow them to make an informed and free decision regarding the risks they are willing to accept in order to achieve the benefits of participation in football. The principle of beneficence, however, mandates that Dr. Gupta act in the best interest of Jesse's health. This is a classic conflict that arises frequently in the field of sports medicine [5-9].

Jesse's mother rightly notes that there are cumulative effects from concussions [10-13]. Many athletes who sustain one or two concussions in sports will go on to have safe, long, healthy, productive lives [14]. As an athlete sustains additional injuries, however, the risk of suffering long-term problems with cognition, behavior, and somatic symptoms increases. Currently, we are unable to predict the probability of long-term problems for a given number of sport-related concussions. Some athletes who have sustained multiple traumatic injuries to the brain over long careers in boxing, American football, and other sports have pathologic changes in the brain such as the deposition of beta-amyloid and phosphorylated tau [15-24]. This condition has become known as chronic traumatic encephalopathy. Although the evidence consists mostly of case reports and series at this time, and there are no definitive studies that show a direct association between the pathologic changes and the presumed neurobehavioral sequelae [25-27], the preliminary evidence is compelling. Therefore, Jesse's mom is right to view this as a risk. Participation in American football also carries the risk of injuries besides concussions and chronic

traumatic encephalopathy, including catastrophic injuries—those that result in death or permanent neurologic damage—the rates of which are higher in American football than most other team sports [28-38].

Jesse's father, on the other hand, rightly notes the benefits of participation in team sports, focusing on social benefits such as sportsmanship. The health benefits of regular exercise are well known, including reduced rates of all-cause mortality, cardiovascular disease, hypertension, rheumatoid arthritis, fibromyalgia, metabolic syndrome, type 2 diabetes, breast cancer, colon cancer, chronic fatigue syndrome, and depression [39, 40]. He points out that many previous high school football players, including Jesse's brothers, are healthy. He also believes that participation in athletics decreases Jesse's risk of getting into trouble after school. He does not want to deny his son these benefits for fear of risk of injury.

When such conflicts arise in medicine, we often turn to ethical principles to guide us in reaching a decision [1-4]. In this case, as is common in sports medicine [5-9], we have two ethical principles that are in conflict with one another. The principle of respect for autonomy acknowledges a person's right to make choices and to take actions based on personal values and beliefs [41]. This principle is derived, in part, from the philosophical teachings of Immanuel Kant and John Stuart Mill. It is a strong, culturally held belief in America and many other Western cultures. This principle has been emphasized in the code of ethics of the International Federation of Sports Medicine (FIMS), which states, "the team physician must...not refuse an athlete the right to make their [sic] own medical decisions" [42]. In addition, the code of ethics of the American Medical Association (AMA) says that "physicians should assist athletes to make informed decisions about their participation in amateur and professional contact sports which entail risks of bodily injury" [43]. It is important to remember that a decision can only be considered truly autonomous if the family understands the nature of the risks being assumed and is free from coercion or other external influences. If respect for autonomy were the only ethical principle involved in this scenario, then Dr. Gupta would discuss with Jesse and his parents the data regarding the risk of injuries in football and allow the family to decide whether or not they wish to assume the risks involved. Ultimately, Jesse's parents have to decide whether they will give permission for Jesse to play.

There is, however, another fundamental principle of biomedical ethics, the principle of beneficence, which conflicts with the principle of respect for autonomy in this scenario. According to the principle of beneficence, physicians have a moral obligation to act for the benefit of their patients. Some believe they should be paternalistic; that is to say, physicians should make decisions on patients' behalf. Patients or parents may desire or request that physicians take the summary of the existing evidence and give their own informed opinions on what they should do, particularly in cases like this where there is not a clear cut-answer.

There are nearly always external forces acting on athletes, making it difficult for them to make truly autonomous decisions. These external forces may include the

inherent desire to support the team or to avoid dissappointing a coach or parent. Opportunities for college admission or scholarships can also exert enormous pressures on an athlete's decision making. The argument can be made that in some instances paternalism is the only real way to safeguard the welfare of athletes.

The tension between these two principles can be seen in the codes of ethics of FIMS and the AMA. In addition to the statements above reinforcing the principle of respect for autonomy, each also emphasizes the principle of beneficence. According to the FIMS manual, a "team physician must...always make the health of the athlete a priority" and "oppose practices that may jeopardize the health of an athlete" [42]. According to the AMA code of ethics, "the professional responsibility of the physician who serves in a medical capacity at an athletic contest or sporting event is to protect the health and safety of the contestants.... The physician's judgment should be governed only by medical considerations" [43] Although this tension has been considered by many authors, there is not universal agreement as to which principle takes priority. Some believe physicians should be paternalistic and safeguard the welfare of athletes, prioritizing beneficence over all other competing principles [44, 45]. Others argue that athletes, if well-informed, should be able to decide for themselves and that physicians must overcome their natural inclination to paternalism, further arguing that autonomous patients have a right to deny a specific treatment for injuries or illness irrespective of the assumed risks [46]. They note that athletes themselves are in fact the ones who know best how decisions will affect their lives. Some argue that patient autonomy always supplants the doctor's opinion.

Ethical principles, however, are not hierarchical, with one taking clear precedent over the other in every situation. Ethical principles need to be considered and balanced in each situation. As these two principles, respect for autonomy and beneficence, frequently conflict when making decisions about allowing athletes to participate in sports, we must balance the value of one against the value of the other. As outlined by Beauchamp and Childress,

> as a person's interests in autonomy increase and the benefits for the person decrease, the justification of paternalism is rendered less likely; conversely, as the benefits for a person increase and the person's interests in autonomy decrease the plausibility of an act of paternalism being justified increases. Thus, preventing minor harms or providing minor benefits while deeply disrespecting autonomy has no plausible justification; but preventing major harms or providing major benefit while only trivially disrespecting autonomy has a highly plausible paternalistic justification [47].

The risks of participation in football, particularly the cumulative effects of concussion and chronic traumatic encephalopathy, are not fully clear. Dr. Gupta cannot reliably predict whether or not Jesse will sustain further concussions, whether those concussions will have a significant effect on his future well-being, and whether or not the subconcussive blows he is likely to sustain while participating in high

school football will result in long-term consequences. Thus, it is unclear whether the decreased risk of injury associated with prohibiting Jesse from playing football outweighs the benefits to his health and well-being of allowing him to participate.

Because there is no unusual risk in this case, respect for the family's autonomy outweighs any potential net benefit, if indeed there is one, to prohibiting Jesse from playing. If there were a clear history of unusual risk or vulnerability (for instance, if Jesse had a history of multiple concussions occurring with decreasing force, injuries that were taking longer and longer to recover, or incomplete recovery) then it would be the responsibility of the physician to step in and insist that Jesse be disqualified from contact sports. In this case, that history doesn't exist, so, the decision should be left to Jesse and his family. Essentially, this process is similar to informed consent after a discussion of the best medical information available.

We agree with Dr. Gupta's decision to acknowledge and recognize both the health risks that Jesse's mother is worried about and the benefits that Jesse's father wants his son to obtain. His recommendation, that the family further discuss the risks and benefits, including Jesse in the conversation, and come to a conclusion about whether or not they wish Jesse to participate in sports, is sound.

Dr. Gupta's approach could be augmented, however, by a more complete evaluation of Jesse and a more complete discussion of the available medical literature. He could more thoroughly assess Jesse's readiness for a collision sport and potential risk of injury. For instance, if Jesse were particularly undersized for his sport or proposed position, if he had physical deficits such as subpar core strength, balance, or neck strength, or if he had already demonstrated a propensity for sustaining concussions with relatively low levels of contact that are expected to occur frequently in football, then Jesse, his family, and Dr. Gupta might feel more strongly about finding a sport with less contact. Furthermore, Dr. Gupta could review the relative incidence of concussion in football versus other team sports. He could discuss the studies that have demonstrated the cumulative effects of concussions sustained during sports. He could discuss the limitations of those studies, including the changes in management of sport-related concussions since the time those included in the studies were playing. He could discuss the evidence of chronic traumatic encephalopathy as well as the limitations of that evidence. By discussing the studies and data that are available while simultaneously acknowledging the existence of clinical uncertainty, Dr. Gupta would promote a more autonomous decision-making process, allowing Jesse and his parents to perform a more informed risk-benefit analysis [4, 48].

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